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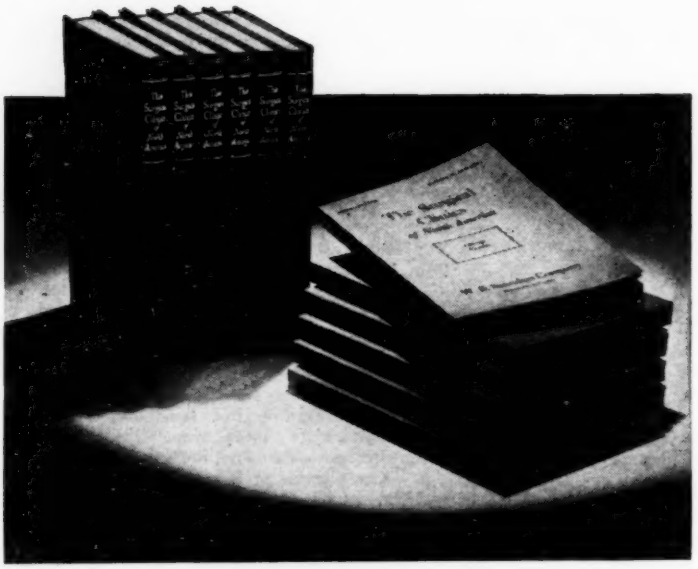

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RECENT ADVANCES IN OBSTETRIC ANALGESIA

Bernard E. Cappe, M.D.
and
Irving M. Pallin, M.D., Brooklyn

The principles that govern good obstetric analgesic practice are the provision of pain relief for the expectant mother, the prevention of maternal complications, and the protection of the newborn from respiratory and circulatory depression. In the United States, more than 100,000 fatalities per year occur on the day of birth and the estimated incidence of sequelae is even greater. It is felt that a decrease of mortality and morbidity might be effected by a better understanding of the recently available pharmacological tools and the exercise of greater precision in their use.

The method of analgesia that is most popular at the present time is the use of the short-acting barbiturates, such as pentobarbital (Nembutal) or secobarbital (Seconal) in the dose of ¾ to 1½ grains (50 to 100 mg.) early in labor to allay anxiety and apprehension. During the active phase of labor, meperidine (Demerol) hydrochloride (50 to 100 mg.), prisilidene (Nisentil) hydrochloride (60 mg.), combined with scopolamine hydrobromide, 1/150 grain (0.4 mg.), is injected.[1] During labor these drugs are reinjected in three or four hours if necessary. It should be emphasized that, with the exception of scopolamine, these drugs produce a fair degree of neonatal respiratory depression. Consequently, this favorite method of producing analgesia falls short of our obstetric analgesic ideal.

The recent trend to furnish safe, adequate relief of obstetric pain for the mother, free of depressant effects in the infant, is exemplified by the following methods: conduction analgesia, intermittent inhalation of an analgesic agent, the administration of analgesics that are devoid of respiratory depressant effect, and the use of a new drug that reverses the respiratory and circulatory depressant effects of the opiates.

The patients under observation in the studies reported here were checked every 15 minutes for changes in pulse rate, blood pressure, and respiratory rate. The degree of analgesia and of hypnosis was classified as mild effect 1+, moderate effect 2+, and intense effect 3+ or 4+. The obstetric progress of the patient was ascertained frequently. A newborn infant who remained apneic after thorough suctioning of the nasopharynx was arbitrarily considered to have depressed respiration. The apneic infants in these studies responded favorably to intermittent positive pressure oxygen therapy.

CONDUCTION ANALGESIA

The conduction method of pain relief has gained wide popularity during the past decade.[2] Techniques of saddle block and caudal anesthesia have been adequately described.[3] When properly performed, the sacral roots are anesthetized and a level of hypesthesia develops up to the 10th thoracic segment. Fundal contractions continue that are devoid of pain. The anesthesia is induced in the primiparous patient after the cervix is dilated 7 cm. and the head is engaged. The multiparous patient is anesthetized after the onset of active labor, when the cervix is dilating and when no problem of cephalopelvic disproportion is presented. Unless the anesthesia is complicated by drug idiosyncrasy or a severe drop in blood pressure, these methods provide relief from the pains of labor without respiratory depression in the newborn.

The advantages to the infant must be judged in the light of the risks to the mother, such as potential postanesthesia neurological sequelae and possible fatalities due to massive spinal anesthesia attributable to faulty caudal technique. These considerations limit this method of pain relief to specific indications. Therefore, these procedures have been reserved for patients with cardiac, pulmonary, liver or kidney diseases, for eclamptic or preeclamptic states, and for premature or multiple deliveries. In cases of abruptio placenta or placenta previa, conduction anesthesia is not recommended, since it produces vasodilatation in the anesthetized area and may therefore increase hemorrhage at the placental site. The usually accepted contraindications to conduction anesthesia are infection of the skin or subcutaneous tissue of the area to be injected, vertebral bone disease or deformity, diseases of the central nervous system, anemia, shock, and impending shock states.

From the Department of Anesthesia, Jewish Hospital of Brooklyn.
Read before the Section on Anesthesiology at the 102nd Annual Meeting of the American Medical Association, New York, June 4, 1953.
Because of lack of space, the bibliographic references have been omitted from THE JOURNAL and will appear in the authors' reprints.

INTERMITTENT ANALGESIA

The self-administration of volatile anesthetic agents has been utilized in the past to alleviate the pain of labor. This method of analgesia has been accorded greater acceptance since the advent of trichloroethylene (Trilene). This agent is inhaled intermittently and acts as a potent analgesic.[4] The patient is instructed to start her inhalation at the very onset or even in anticipation of each contraction in order that an adequate concentration of the anesthetic may be absorbed and circulated to the cortex, thereby producing its optimal effect. Since the drug is not inhaled in the interval between each contraction, the anesthetic content of the blood diminishes. Since the trichloroethylene inhalation is discontinued prior to delivery, newborn respiration is unaffected and there is spontaneous breathing. The maternal complications that occasionally occur are tachypnea, hypotension, extrasystoles, or bradycardia. The presence of these untoward effects usually prohibits the further use of the drug.

In 1951, Gordon and Morton reported adequate analgesia in 90.7% of their patients who received the trichloroethylene by inhalation.[4a] In our series of 55 patients, about 50% had marked relief of pain and a mild to moderate effect was observed in the remainder. A large proportion of our patients are extremely tense and uncooperative, which may account for our less favorable results. No respiratory depression in the newborn occurred unless the patient received medication in addition to the trichloroethylene analgesia.

ANALGESIA WITHOUT RESPIRATORY DEPRESSION

There has been ascribed to several drugs the property of good analgesia without respiratory depression. The following agents were given a trial.

Intravenous Use of Local Anesthetics.—Two grams of either procaine hydrochloride or lidocaine (Xylocaine) hydrochloride was dissolved in 1 liter of 5% dextrose in water to prepare a 0.2% solution of these drugs.[5] After the patient was given 1½ grains (0.1 gm.) of pentobarbital rectally or parenterally, either the procaine or lidocaine solutions were administered intravenously and set to flow at a rate of 80 to 100 drops per minute. The study was extended to five patients for each drug. Although hypnosis occurred in the lidocaine group, slight or negligible pain relief resulted from use of either preparation. Toxic reactions such as twitchings and nausea were seen in both series.

Alcohol in Dextrose Solution.—Several investigators have reported satisfactory results in labor patients with the intravenous use of alcohol in 5% dextrose in water with 5 or 7% alcohol concentrations.[6] Our routine was to set up the apparatus for intravenous administration of 1 liter of 5% alcohol in 5% dextrose solution. From 200 to 800 cc. of this solution was administered rapidly until a sedative effect or some relief of pain was noted. The rate of flow of the solution was then adjusted so that the patient received 200 cc. of this fluid in each succeeding hour. Of 48 patients subjected to this routine, 12 were completely relieved of their pains for the entire labor period, but the remainder required additional analgesia. Neonatal respiratory depression was not evident in the group that received only the alcohol medication.

Antihistaminic Drugs.—Antihistaminic drug medication is complicated by the side-effects of hypnosis and sedation. A study was undertaken to explore the extent of this hypnotic and analgesic effect. Two well-known antihistaminics, diphenhydramine (Benadryl) hydrochloride and chlorporphenpyridamine (Chlor-Trimeton) maleate were utilized in two groups of 30 patients each. These drugs were injected intravenously in fractional quantities until eventually massive dosages were attained. Moderate analgesia was achieved in 35 to 40% of the patients. The dose range for diphenhydramine hydrochloride was 80 to 120 mg. and for chlorprophenpyridamine maleate 10 to 20 mg. More intense analgesia resulted with diphenhydramine. The untoward effects occasionally observed with either preparation were nausea, vomiting, and hypotension. Newborn respiration was not depressed by either drug.

Combination of Alcohol and Dextrose Solution with Diphenhydramine.—An intravenous infusion of 5% alcohol in 5% dextrose in water was given to each one of the labor patients in this group according to the routine previously described. Twenty milligram fractions of the diphenhydramine hydrochloride were injected into the infusion tubing every 10 minutes until the pains were relieved. The parturients in this group received a total of 800 to 2,000 cc. of the alcohol solution and 40 to 120 mg. of the diphenhydramine hydrochloride. Fifty-five patients received this combination. A high degree of comfort was provided for 46 patients (83.6%). All the infants in this group breathed spontaneously.

REVERSAL OF RESPIRATORY DEPRESSION

Experimental and clinical reports have revealed the value of nalorphine (Nalline) in reversing the respiratory and circulatory depressant effects of morphine, opium alkaloids (Pantopon), dihydromorphinone (Dilaudid), methadone, and meperidine.[7] Huggins denies that nalorphine has an antagonistic effect on meperidine.[7d] Eckenhoff, Hoffman, and Dripps demonstrated the value of nalorphine in obstetric patients. The various opiates as well as meperidine were given to a large series of expectant mothers. A significantly decreased incidence of newborn respiratory depression was observed in the patients who were given nalorphine prophylactically prior to delivery as compared to the control groups.[7f]

In order to take advantage of the superior analgesic quality of morphine as well as the reversal action of nalorphine on respiratory and circulatory depression, we investigated the effects of a mixture of morphine and nalorphine on labor patients. It was found that 10 to 15 mg. of nalorphine maximally offsets the respiratory and circulatory depressant effects of 15 mg. of morphine sulfate when these drugs were combined. Equal doses of morphine and nalorphine were mixed and administered by fractional intravenous injection to 75 patients in active labor. The dose ranged from 5 to 40 mg. of each drug, with an average of 15.8 mg. Intense hypnosis and analgesia resulted, and the effect lasted from 50 to 505 minutes (average 192 minutes). The effect on respiratory rate, blood pressure, and pulse rate was negligible. The labor was considered to have progressed at a normal rate. Except for respiratory depression in one infant, all breathed and cried spontaneously. The infant with depres-

sion was the firstborn of twins; it was apneic at birth but was rapidly resuscitated with intermittent positive pressure oxygen therapy. The second twin was delivered by version and breech extraction and cried spontaneously.

The majority of the patients in the foregoing studies were delivered under regional anesthesia. When this method was not feasible, light (first plane) cyclopropane anesthesia was administered to the mothers. Deep (third plane) ether anesthesia was utilized on only one occasion for the delivery of the previously mentioned second twin.

COMMENT

Causes other than the analgesia administered play a role in the production of neonatal depression. The obstetric and anesthetic factors must be considered in each case as well. Studies on analgesia are preferably accompanied by a control series, but at present no method of measuring pain relief is widely accepted. Similarly no uniform standard for assessing newborn respiratory depression is utilized by any large group of clinics. Some of the methods currently in use measure the newborn apneic period from the birth of the toe or head to the first spontaneous breath or cry. However, the objection to these criteria lies in the fact that the infant may breathe or cry spontaneously and then suddenly become apneic and show marked depression. It is felt that a proper classification of newborn depression should provide for the frequent assessment of the respiratory and circulatory status of the infant during the initial 24 hour period.

This study was undertaken in an endeavor to evaluate the most promising recent advances in the field of obstetric analgesia. Each method was individually assessed on its own merits. Certain procedures were original and others were modified in order to gain additional benefits. It is felt that the risk inherent in caudal and saddle block anesthesia should limit these techniques to the specific indications that have been outlined. Trichloroethylene supplies the best result in terms of a placid and cooperative patient. A high degree of durable pain relief was observed in two groups: (1) the patients who received the intravenous infusion of 5% alcohol in 5% dextrose in water combined with the fractional injections of diphenhydramine hydrochloride. and (2) the mothers who received the mixture containing morphine and nalorphine. It is understood that these latter studies are still in the exploratory stage, and further investigation is necessary.

These studies to date consist of small numbers of patients in most of the series presented, and, therefore, conclusions of statistical significance cannot be reached. However, the emphatic point of this paper is the desire to present for consideration effective obstetric analgesic agents that produce only minimal or negligible respiratory depression of the newborn.

SUMMARY

A critical review of recent trends in obstetric analgesics is presented. In general, the obstetric analgesic ideal of safe, maternal relief of pain without newborn respiratory depression is best achieved with one of the following methods: conduction analgesia, caudal and saddle block, administration of trichloroethylene (Trilene) by inhaler, intravenous infusions of alcohol combined with fractional intravenous injection of antihistaminic agents such as diphenhydramine (Benadryl) hydrochloride or chlorprophenpyridamine (Chlor-Trimeton) maleate, and the parenteral administration of a mixture of morphine and nalorphine (Nalline).

THE LOW SODIUM SYNDROMES OF SURGERY

AN OUTLINE FOR PRACTICAL MANAGEMENT

Francis D. Moore, M.D., Boston

An acute lowering of the plasma sodium concentration is always a sign of trouble in patients who have undergone surgery. Even in instances in which the plasma sodium concentration has been lowered to levels between 130 and 135 mEq. per liter for many months by dietary restrictions or visceral disease, the situation bodes ill if trauma is then superimposed. The clinical picture that accompanies a low serum sodium level in patients undergoing surgery consists primarily of weakness, anorexia, and lethargy. The patient may be disoriented or comatose, his reflexes are sluggish and his responses slow. Urine formation is usually very slow, gastrointestinal function is poor, some edema may be present, and the patient looks "washed out." If the patient is in the postoperative period, convalescence may seem to have ceased its dynamic daily progression and appear "stalled." If acute trauma is superimposed, blood pressure is poorly maintained. This picture is not pathognomonic. The plasma sodium concentration cannot be estimated from clinical appearances.

I have seen patients regain their normal health, strength, vigor, and plasma tonicity simply by taking adequate calories and food. This point is emphasized here only to introduce the concept that a low serum sodium level means a sick patient, but one must treat the patient not the serum sodium deficiency alone.

NORMAL SODIUM METABOLISM AND DISTRIBUTION

One milliequivalent of sodium weighs 23 mg. There is about 2,700 to 3,000 mEq. of sodium in a normal 156 lb. (70 kg.) male, about 1,800 to 2,000 mEq. of which is in the extracellular phase. Here it resides at a normal concentration of 138 to 143 mEq. per liter. This concentration is found throughout the extracellular phase including the plasma. Although there are slight

From the Department of Surgery, Peter Bent Brigham Hospital, Harvard Medical School.

Read before the Section on Surgery, General and Abdominal, at the 102nd Annual Meeting of the American Medical Association, New York, June 4, 1953.

differences between the extravascular and intravascular sodium concentration owing to the Gibbs-Donnen effect, these are generally very small and should not enter into clinical thinking. A shift of sodium from intravascular to interstitial compartments would not of itself change the concentrations; it would merely move water. Next, there is a small fraction of body sodium in cells. The great mass of body cells are those of striated muscle, which constitutes 78 to 85% of the lean body mass. The concentration of sodium within these cells is not known accurately, but it may be in the region of 5 to 7.5 mEq. per kilogram of intracellular water. Finally, there is a very large amount of sodium in the skeleton. This sodium may amount to as much as 1,000 mEq. in a big-boned person. The sodium of the skeleton may be thought of as comprising three distinct fractions. First, there is that which exists in association with chloride and that is probably in the extracellular fluid phase of bone. This amount of sodium is small, amounting to from 25 to 30 mEq. per kilogram of wet bone. Secondly, there is that portion of sodium that exists over and beyond chloride, the "excess sodium," of which one-half is readily exchangeable with sodium elsewhere in the body. This second fraction we refer to as the "exchangeable bone sodium." The third fraction of bone sodium is that which exists over and beyond chloride but that is not exchangeable with atomic sodium. This sodium is fixed in some sort of an insoluble, inorganic complex. We refer to this as the "unexchangeable bone sodium." All of the "excess sodium" in bone, both exchangeable and unexchangeable, probably exists in some phase of the inorganic structure of bone associated with the crystal lattice of calcium phosphate complexes. The total amount is large, about 200 mEq. per kilogram of wet bone. Recent knowledge indicates that this bone sodium may be of considerable importance in metabolic emergencies.

The normal daily sodium diet is approximately 100 mEq. A person who likes a great deal of salt on his food may be found to be eating 175 to 200 mEq. per day of sodium. In a normal person who is in zero balance, neither gaining nor losing weight, the excretion is of course equal to the intake. This excretion is predominantly urinary and will therefore total about 100 mEq. per day, depending on the diet. A person on a low sodium diet will take in 20 to 30 mEq. per day, and, if his kidneys are normal, this person may also be in zero balance. In normal persons a low sodium diet will not readily lower the plasma sodium concentration, because sodium-conserving mechanisms are quite efficient. When there is heart disease, liver disease, or kidney disease and a tendency to water retention, however, a low sodium diet may be associated with a low serum sodium concentration.

Isotonic sodium chloride solution contains 146 to 155 mEq. per liter, depending on whether it is 0.85 or 0.9% sodium chloride. Blood bank whole blood contains, in the plasma fraction, about 145 mEq. per liter of sodium. In the plasma, protein exists at a concentration of about 6.5 gm. per 100 cc. There is a total of about 250 gm. in the plasma of a man. In the extracellular, extravascular phase, the "interstitial space," protein is found at a variety of concentrations ranging from as high as 5 gm. per 100 cc. in liver lymph on down to a fraction of 1% in peripheral lymph. It is possible to make a very crude estimate of the amount of solute, "plasma," protein in the extravascular, extracellular phase (about 150 gm.). One can then derive a sodium-protein ratio for the entire extracellular phase. This ratio is 2,000 mEq. of sodium for 400 gm. of protein, or 5 mEq. of sodium per gram of solute, "plasma," protein. When this ratio is distorted in the direction of too much sodium, the protein concentration will inevitably fall, regardless of other factors; hence the importance of the concept.

Endocrine forces bearing on sodium metabolism are complex and beyond the scope of this article. It should be pointed out, however, that the hormones of the adrenal cortex have the net effect of decreasing urine sodium concentration by sodium resorption in the renal tubules. They tend to raise plasma sodium concentrations by this and other mechanisms. Desoxycorticosterone acetate (DOCA) is an artificial substance not normally found in the adrenal gland, but it resembles adrenal steroids and has a remarkably strong sodium-conserving effect on the renal tubules.

The pituitary antidiuretic hormone has an interesting effect with respect to sodium. It tends to promote sodium excretion from the kidney to a moderate extent. It tends to favor water resorption from the distal tubule to a very marked extent. The net result is that prolonged intense antidiuretic activity, especially if accompanied by water administration, results in a marked lowering of sodium concentration in the serum and a slight lowering of total body sodium. Thus we find that the anterior pituitary, through its stimulating effects on the adrenals, and the posterior pituitary, are directly antagonistic as regards their effect on both body sodium and serum sodium concentration. This is another example of homeostatic "balance" between opposite endocrine forces, forces that in this instance reside in two parts of the same gland. All of these metabolic and endocrine factors are of importance in the care of patients undergoing surgery.

BASIC TYPES OF LOW SERUM SODIUM SYNDROME IN SURGERY

There are three basic types of low serum sodium seen in patients who have undergone surgery. Mixtures, of course, occur. It is most profitable, however, to discuss the three types distinctly.

Normal Body Sodium and Body Water with a Low Serum Sodium Concentration.—The "sodium paradox" is the term applied to normal body sodium and body water with a low serum sodium concentration. It is found in normal persons who are severely injured. It is found after major surgery. In these instances there may be no loss of sodium from the body. In fact, there may be some gain. The change in body water may be zero or even a slight decrease. But, despite these various factors, which one might predict would hold the serum sodium concentration at normal or slightly elevated, the serum sodium is paradoxically seen to drop.

Normal Body Sodium but Too Much Water with a Low Serum Sodium Concentration.—"Water intoxication," or sodium dilution, applies to a condition of nor-

mal body sodium but too much water with a low serum sodium concentration. It is most characteristically found when too much water has been administered in the presence of an antidiuretic effect. This is characteristic of persons with heart disease, liver disease, or kidney disease. It is found after injury or major surgery when too much sodium-free water has been given.

Low Body Sodium with Low or Normal Body Water.—A true "sodium deficiency" occurs when there is low body sodium with low body water. When the sodium loss is in excess of water a low serum sodium concentration is produced. This is the situation classically referred to as "dehydration." It is important to emphasize that, in the two other disorders mentioned above, dehydration does not exist. We therefore reemphasize that the surgeon should not diagnose "dehydration" on the basis of a low serum sodium concentration and most definitely should not treat the patient for dehydration unless it actually exists. Sodium deficiency usually occurs because of gastrointestinal, or other extrarenal, losses. In certain special instances, loss may occur in the urine as a result of renal or adrenal disease. A test dose of desoxycorticosterone acetate is useful in differentiating the organ at fault when sodium deficiency results from urinary loss (see below).

THE APPROACH TO THE PATIENT

History and physical examination are of overriding importance. The following information should be particularly sought: 1. What is the patient's normal weight and recent weight curve? Is he gaining or losing weight? 2. Has he been subjected to trauma? If so, is he losing weight as he should? 3. Is there edema? 4. What is the recent intake-output water balance? Is he dehydrated? 5. What is the urine output? 6. Is the patient eating or starving? 7. Is there visceral disease such as heart failure, liver failure, terminal cancer, or kidney disease? When these questions have been answered, laboratory work can be undertaken. It need not be complex, but certain determinations are essential to intelligent management. The following questions should be answered: 1. What is the patient's colloid osmotic pressure and oxygen-carrying capacity? This may be measured by serum protein concentration and hematocrit. 2. What is the patient's acid-base balance? The physician should check carbon dioxide combining power, chloride concentration, or pH. 3. What extrarenal losses are taking place? This may be determined by analysis of vomitus, tube drainage, and fistula output for sodium, chloride, and potassium. 4. What influences are bearing on the cell itself? Plasma potassium concentration should be determined. 5. Are the kidneys doing their normal job of saving sodium and excreting nitrogen? The urine sodium concentration and blood urea nitrogen should be checked. The last determination, namely that of urine sodium concentration, is probably the most important single determination in carrying forward with treatment of these syndromes, as will be mentioned below.

CLINICAL CLASSIFICATION AND TREATMENT

Sodium Paradox.—The patient who is suffering from "sodium paradox" has a low serum sodium level; he has had an operation or received an injury and is losing weight normally, with no unusual renal or extrarenal loss and no chronic disease. A plasma sodium level as low as 125 mEq. per liter is compatible with this disorder. Notice that the patient has recently had a trauma. By "recently" is meant within the last week. He is losing weight quite normally, this weight loss being the result of negative nitrogen balance and fat oxidation. Weight losses in a normal-sized adult soon after massive trauma should run in the region of 300 to 500 gm. per day. A less rapid weight loss than this in a man suggests some degree of water retention. Women do not react quite so strongly to trauma and may not lose weight quite so rapidly, but the patient should be losing weight normally after injury until normal diet is again resumed.

Notice that there is no unusual renal loss. This is established by the finding of low urinary sodium concentrations that, with a low serum sodium concentration and after trauma, should be less than 25 mEq. per liter. This analysis should be based on a specimen representing at least a six hour collection when no sodium is being given intravenously. If sodium is being given intravenously, there will always be some "spill" in the urine, and this of course would be misleading in differential diagnosis by urine sodium concentration. As an associated finding, the plasma potassium concentration may be elevated. This may not be immediately evident, since concentrations in the range of 4.7 to 5.2 mEq. per liter are not regarded as particularly abnormal. Yet, if serial determinations are made, it will often be found that in this poststress electrolyte "shift" there is a jump in plasma potassium concentration during the time when there is a dip in serum sodium. Under exceptional circumstances, this rise in plasma potassium level may achieve toxic dimensions, particularly if the stress has been remarkably severe or if the kidneys have been directly injured, either by trauma or by ischemia. The treatment here is centered on the recognition of the situation. The physician should wait, and take care of the patient as an early convalescent after injury. The patient should be mobilized and just as soon as his gastrointestinal tract will accept it, he should be given food. He should not be drowned with salt and water infusions. He should not be considered dehydrated unless there is conclusive evidence. Close attention should be paid to the blood volume, colloid osmotic pressure, and oxygen carrying capacity. The body water should be maintained by balancing insensible losses accurately. The weight should be checked daily. He should never gain weight rapidly or lose weight rapidly soon after trauma; instead, he should have a gradual decline in weight until such time as his oral caloric intake is again resumed. It is reasonable to give a moderate amount, up to 100 mEq., of sodium intravenously the first day that the syndrome is recognized. If a toxic concentration of plasma potassium coexists with this low sodium level, it is wise to give 300 cc. of 3% sodium chloride solution, this being approximately 175 mEq. of sodium. This should be done the first day only, and after that losses should be delicately balanced and no excess sodium given. This sodium is given solely to balance a high plasma potassium level; sodium is an antidote in potassium toxicity. The characteristic course is that of gradual recovery of serum electrolyte to normal levels as convalescence progresses.

Water Intoxication or Sodium Dilution.—The patient who is suffering from "water intoxication," or "sodium dilution," has a low serum sodium level, is chronically depleted, and may have heart disease, liver disease, or an advanced form of cancer. He may have a severe burn, or he may have been injured recently. He is undernourished and anemic. He is not losing weight normally as he should be if he has been injured, and he may be gaining weight. The water balance is positive, there is no renal or extrarenal loss of sodium, and edema may be present. It should be noted that the emphasis is on depletion, undernourishment, cachexia, and chronic disease. This situation may exist previous to trauma, in which case trauma will accentuate the dilution of normal plasma electrolyte. The precarious situation may not have been recognized prior to the operation, in which case it is often picked up postoperatively when the patient is "not doing well." Notice that the patient may be gaining weight. This can be ascertained only if serial body weight determinations are made. If a patient has been severely injured or has had an extensive operation and is maintaining a steady weight, this is the equivalent of weight gain in the untraumatized state, since the patient should normally be losing weight by mobilization of fat and lean tissue.

Associated findings often include some degree of azotemia. Such patients often show elevations of blood urea nitrogen in the region of 35 to 70 mg. per 100 cc. A low hematocrit and serum protein concentration are evidences of both anemia and extensive water intoxication. Notice that there is no renal loss of sodium; the urine sodium concentration here is low. There is no extrarenal loss of sodium. This particular situation of water intoxication may of course be complicated by extrarenal losses or may complicate them, but in its pure form it exists without any excessive loss of sodium from the body. Recent intake-output water balances will show that the patient has had a big intake in relation to output. This intake may be by vein when excessive infusions of 5% dextrose in water may have been given. Such infusions should never exceed normal insensible and renal requirements. Recent trauma accentuates this situation of water intoxication.

The treatment here is firstly to limit the patient's water intake very precisely to "balance." The patient may be given no water whatsoever for 24 hours and allowed to lose some water by the lungs. Surprisingly, patients in this situation may be thirsty despite the water intoxication. This has to be taken into consideration in treatment. One would like to see the patient lose weight rapidly for a day or two and then settle down to weight losses of about 300 gm. a day until oral intake commences. Just as in other instances, it is very important to boost the caloric intake and maintain the blood volume at near normal. The patient should not be given large infusions of anything! There is a great tendency, when encountering an unusual disorder of water and electrolytes, to start an intravenous infusion. This is not needed nor required in such a situation as this. After a period of observation and study, ascertaining the other laboratory measures mentioned above, the patient may be given one infusion of 300 cc. of 3% sodium chloride solution. This may result in a transient elevation of the serum sodium concentration, some diuresis, and "trigger" a redistribution of water and electrolytes toward normal. If a patient in this situation is given enough sodium theoretically to raise the serum sodium concentration completely to normal, the patient will be endangered by congestive heart failure. Body water is high, and a tremendous weight of sodium is required to restore concentrations. What is needed is not more sodium, but for the patient to lose water, and he will do this unless kidney function is remarkably poor. If the patient has not been operated on and is suffering from heart disease, marked fluid restriction and guarded use of mercurial diuretics may be helpful.

Sodium Deficiency.—The patient who is suffering from "sodium deficiency" has a low serum sodium level; he is losing weight and water rapidly; and he is acutely ill, dehydrated, acidotic, and azotemic. In most instances he shows extrarenal losses by vomiting, fistula, diarrhea, or intestinal obstruction. This condition is the classical dehydration about which so much has been written. Notice that the patient is losing weight rapidly. This is an acute situation. When dehydration occurs rapidly, water loss is essentially equal to weight loss. The loss is so large that the changes in fat and lean tissue are not readily apparent. Losses of 2 or 3 kg. in a day from this source therefore indicate the loss of 2,000 to 3,000 cc. of water. Azotemia may be severe, particularly if trauma has occurred in the recent past. Associated with very low urine volume is a urine of high specific gravity and a rising concentration of serum potassium.

It is very important to emphasize that, although this type of sodium deficiency leading to shock with a high hematocrit usually occurs with extrarenal losses, it may also be caused by pathological renal losses, and therein lies the next step in accurate diagnosis. The urine sodium concentration and desoxycorticosterone acetate test must now be considered. When obvious extrarenal losses are not present, or are seemingly inadequate to produce the defect, the patient's urine sodium concentration should be measured immediately. In certain instances this is an emergency laboratory procedure. If the urine sodium concentration is below 25 mEq. per liter (it is often below 1 mEq. per liter) one may consider that the patient's renal tubules are responding normally to the situation and that losses elsewhere are at fault. One occasionally finds, however, that the urine sodium concentration is high. Anything over 30 mEq. per liter is pathological in this type of situation when there is a low serum sodium concentration. It should be noted again that this urine sodium concentration must be measured on a specimen taken when no sodium is being given intravenously. This pathological renal loss is often discovered when there is no extrarenal loss: sodium deficiency may be renal in origin. On this basis, we may divide "sodium deficiency" into two categories. In one, the urine sodium concentration is low and extrarenal losses are high; in the other, the extrarenal losses are low but renal losses of sodium are high.

Typical extracellular dehydration due to extrarenal loss is evident when the urine sodium concentration is low, and the extrarenal losses are high. The treatment

consists in giving water and salt adequately. It is important to emphasize that water and sodium therapy may have to be massive, yet there are reasonably safe limits to parenteral fluid therapy. In general we have not given more than 300 mEq. of sodium in one day to sick or elderly patients. In one or two instances of remarkable extrarenal loss in young persons we have given them as much as 500 mEq. of sodium in one day. It is important to emphasize that giving a huge water and sodium infusion will inevitably lower the serum protein concentration. The serum protein concentration may be high when the patient is dehydrated, in which case its lowering is not a matter of concern. If it is normal or low to begin with, however, one may find that the restorative treatment, if carried out too rapidly and too energetically, results in the production of generalized edema and hypoproteinemia. This should not be taken to indicate that therapy should be administered gingerly or in a miserly way in this situation. Patients with acute extracellular dehydration (water and sodium loss) must be treated intelligently and energetically. One of the best methods of starting treatment is to back-calculate the loss by history. The past losses may be estimated and the current losses by extrarenal discharges (vomitus, tube drainage, and stools) analyzed. On this basis, the approximate sodium deficiency may be calculated directly in milliequivalents, and the target, of course, is the restoration of these past losses in the course of about three days. No attempt should be made to restore all the past losses at once. It should be noted that analysis of extrarenal discharges is of great importance in this situation. Thus the patient may be treated by "thinking in terms of balance" and a good result achieved. In some patients extrarenal losses are low but renal losses of sodium are high. In the presence of a low serum sodium concentration, a urine sodium concentration over 30 mEq. per liter is pathological. This indicates visceral disease. The next step is to determine what viscus is at fault. For this purpose the patient is given desoxycorticosterone acetate, 3 mg. intramuscularly three times a day. The effect of this drug on the urine sodium concentration constitutes the desoxycorticosterone acetate test.

The desoxycorticosterone acetate test permits us to differentiate this group of urinary sodium deficiencies into another pair of subgroups that might be called "renal failure" and "adrenal failure" as follows. When there is a high urine sodium concentration and it falls normally in response to desoxycorticosterone acetate, this suggests adrenal failure. The renal tubule is quite normal, can respond to hormonal influences, but has not been brought under such influences naturally. It is very important to emphasize that this form of salt-losing adrenal failure after operation may occur in the presence of an eosinophil count that has fallen normally and in the absence of any previous history of overt adrenal disease. The treatment consists of giving water, salt, desoxycorticosterone acetate, and cortisone. The response of the patient may be among the most gratifying therapeutic results obtainable in surgical care. When the urine sodium concentration is high and it remains unchanged after administration of desoxycorticosterone acetate, this suggests renal failure, and it signifies that the patient's renal tubules simply are incapable of responding to a stimulus to sodium resorption. This is usually associated with chronic renal tubular disease. It is very important to emphasize that this may occur in the absence of any previous overt history of renal failure and with a preoperatively normal blood urea nitrogen level. When the crisis is past and the patient is again well, very careful study of kidney function will usually reveal some tubular defect, usually on the basis of senile arteriosclerotic renal disease. The stress of trauma, however, brings out this latent defect, since sodium conservation, which is a normal aspect of the metabolic response to trauma, cannot occur.

The treatment here is to give water and salt "to balance." The urine sodium concentrations must be measured every day and be the basis for the treatment of the patient as regards water and salt. The patient must be nursed through his convalescence with great care. It is important to emphasize that, with this type of tubular defect, metabolic acidosis is very common and severe degrees of azotemia and water retention may also occur. It must again be mentioned that the high urine sodium concentration type of sodium deficiency due to adrenal or renal disease may complicate or be complicated by severe extrarenal losses. This combination requires careful study and therapy.

ADDITIONAL CONSIDERATIONS

Thus we find that with present knowledge of normal metabolism after surgery, of sodium metabolism and distribution, and of renal and adrenal function, it is possible to classify and treat these low sodium syndromes intelligently. Certain special properties of the kidney deserve reemphasis. These relate to the tendency toward sodium resorption that normally follows stress. The normal kidney saves sodium by resorption from the glomerular filtrate (*a*) in response to a low serum sodium concentration or (*b*) in response to injury. It is not generally realized, however, that the normal kidney discards large amounts of sodium in response to excessive loss of chloride. The commonest example is pyloric obstruction in duodenal ulcer. Here we have chloride losses from the stomach that run as high as 300 mEq. a day. The kidney works overtime, trying to keep up with this threatened acid-base imbalance by discarding huge amounts of sodium. The result is that the patient can maintain normal acid-base balance up to a point, but severe electrolyte depletion develops. This persists for about two days; the limit of sodium discard has been reached, then other factors supervene, sodium is conserved, and the patient passes into the very severe metabolic alkalosis so familiar to all surgeons.

The important point to be learned is that if this chloride loss occurs with a stress, such as an operation, the normal renal discard of sodium is blocked by adrenal discharge. Post-trauma sodium conserving forces "win out" in this battle for influence on the renal tubules. The result, therefore, is that the normal renal mechanism that maintains acid-base balance in the face of chloride loss cannot operate, and severe metabolic alkalosis occurs suddenly, severely, and refractorily.

This general situation leads to the development of hypokalemic alkalosis when potassium losses have also occurred.

In considering acute electrolyte disorders we must therefore give some thought also to those situations in which the kidney is accustomed to excrete large amounts of sodium but cannot do so because of stress. The interplay of all these forces on serum electrolyte concentration is complicated and is often unpredictable. One will be surprised, for instance, on seeing a patient who shows a poststress "sodium paradox" with low serum sodium concentration, to find that the serum potassium concentration is unexpectedly normal or, on occasion, even low. In other situations, when large amounts of sodium have been given to the patient, one may find that the serum potassium concentration has been diluted down to a perilously low level.

It is important to emphasize again that sodium and potassium antagonize each other in the extracellular phase. Giving small amounts of potassium intravenously, such as 40 mEq. each day, to a patient who is not eating will serve to some extent to block the sodium "shift" phenomenon and will assist in maintaining a good serum sodium concentration. Similarly, when the poststress "shift" has produced a high serum potassium concentration and a low serum sodium level, the administration of sodium will help to counteract the effect of the plasma potassium concentration on neuromuscular irritability, cardiac function, and the electrocardiogram. In speaking of "shift" of sodium we are referring to movement of sodium from the extracellular phase (plasma plus interstitial fluid) into some other body area, where it can replace other ions without moving water. Such a shift will lower concentration. Reference has occasionally been made in the literature to a shift of sodium from the plasma to interstitial fluid as a cause of lowered concentration of sodium in the plasma. The physical chemistry of such a result from sodium or water shift across a membrane such as the capillary, which is almost perfectly permeable to sodium and water, is difficult to understand. A massive shift of sodium and water from plasma to interstitial areas could occur without any fall in plasma sodium concentration as long as no sodium-free water is added to the system.

Were sodium to move, in response to endocrine forces, from extracellular fluid into some other body reservoir less permeable to sodium, concentration changes could occur. The mass of body cells (skeletal and muscle) has been considered a site for this shift. Recent evidence suggests that the crystal lattice sodium (the "excess sodium") of bone may indeed be this reservoir, rather than body muscle cells. The giving of concentrated sodium is occasionally of great usefulness. Three per cent sodium chloride or 0.5 M sodium bicarbonate are serviceable solutions. The physician must beware of too rapid administration of such potent solutions in sick patients and remember the inevitable effect on serum protein concentration. Finally, it should be emphasized that kidney cells are like other cells in the body. They require normal extracellular concentrations of electrolyte around them in order to work well. We find that, when there is low serum sodium concentration, renal function often resumes with the administration of sodium. Similarly in hypokalemia good diuresis will occur with the cautious administration of potassium. When there is hyperkalemia and hyponatremia, the administration of sodium may help to lower the serum potassium concentration by promoting diuresis. The kidney has its specific job to do with respect to electrolyte regulations, yet kidney cells themselves are very vulnerable to alteration in extracellular electrolyte concentration.

SUMMARY

A low serum sodium concentration in a patient who has undergone surgery is an unfavorable sign. It is necessary to find the cause and to treat the patient, not the low serum sodium concentration. One patient may need only careful observation and nursing; another may need caloric intake or blood administration. Another patient may need 300 mEq. of sodium infusion very rapidly. Another may need 9 mg. of desoxycorticosterone acetate (DOCA). The differentiation of these different types and therapeutic necessities is the key to success. "Sodium deficiency" or "dehydration" should not be treated unless they are known to exist. In two out of three patients with low serum sodium concentration, neither of these conditions exists. The basic types of disorder are (*a*) the "sodium paradox," (*b*) "water intoxication," and (*c*) "sodium deficiency," which may be divided into two subgroups as follows: (1) the usual situation, in which the extrarenal loss is high and urine sodium concentration is low, and (2) the relatively rare situation, in which the extrarenal loss is low and the urine sodium concentration is high. This group may be further subdivided as follows: (*a*) adrenal failure, in which urine sodium concentration falls in response to desoxycorticosterone acetate, and (*b*) renal tubular failure, in which the urine sodium concentration does not fall in response to desoxycorticosterone. Methods and concepts are thus now available to diagnose the nature of and treat low serum syndromes in surgery.

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Viruses Within Cells.—Before describing the new technique for catching viruses in the process of propagation in the cell, I would like to outline the most recent theory as to how this process takes place. G. S. Stent explained it in detail in his article on "The Multiplication of Bacterial Viruses" in the May issue of *Scientific American*. In infecting a bacterium a bacterial virus first attaches itself to the cell by a needle-like structure which was once believed to be a tail but is now thought to be its proboscis. Through this needle the virus injects into the cell its internal gene-like material, the nucleic acid known as DNA. The emptied protein coat of the virus is left outside, like a disposable container, and plays no further part in the production of offspring. Within the cell the virus's DNA—its reproductive, genetic substance—proceeds to sabotage the bacterium's metabolism, forcing it to produce virus nucleic acid and protein instead of the materials it normally manufactures for its own growth. After a short incubation period, parts of new viruses—just the protein coats—begin to form. Then, a little later, a large number of fully formed viruses rapidly appear in the cell; that these structures are mature viruses is proved by the fact that if extracted and put to the test they show the ability to infect bacteria. When the cell becomes filled with these progeny, it bursts open and the new viruses emerge.—Joseph L. Melnick, *Scientific American*, December, 1953.

CEREBRAL COMPLICATIONS OF PREGNANCY

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This subject is not new to the obstetrician, the neurologist, or the general practitioner. The purpose of this paper is to point out that cerebral complications not only occur during pregnancy but are commoner than previously noted. More detailed clinical examination plus the information made available through recently developed laboratory techniques disclose cerebral symptoms in the mother and permit early application of therapeutic procedure.

The standard textbooks of obstetrics are woefully inadequate on the subject, and even the systems edited by A. H. Curtis [1] and P. Titus [2] devote only brief notice to the subject. The literature documents previous reports, and comprehensive reviews have been published. Among the best is that by Alpers and Palmer.[3] They cite the early account of Ménière, in 1828, who was the first to show that puerperal hemiplegia could be due to cerebral hemorrhage. The frequency was low; Harrar [4] reports one to three deaths in 100,000 confinements, and Villa, two in 10,000 cases. Even early studies indicated that such accidents occurred in young women, and half of von Hösslin's [5] 34 cases of hemiplegia were in women under 30. Two recent articles deal very comprehensively with the subject and are more representative of present thinking. King [6] has published a review of the subject, while Rand and Andler [7] have presented the special problems associated with primary neoplasms of the brain.

Experiences with neurological complications during pregnancy, even in a general hospital with a relatively small obstetric service, indicate that these complications are comparatively frequent. The patients are for the most part private and have had excellent prenatal supervision. Some are clinic and maternity center patients, with equally close prenatal care. No figure is offered as yet because there is no way to calculate accurately just how often such problems occur. Not all obstetricians invite consultation routinely. A fainting spell during the puerperium may presage a convulsive state later in life or a brain tumor the symptoms of which may not be full blown for many years. The pregnancy, and particularly the delivery, may bring to light a cerebral aneurysm that may leak or rupture. Momentary loss of speech may indicate an area of softening that may later act as an epileptogenous focus.

The old idea that convulsions, aphasias, hemiplegias, and syncopal episodes incidental to pregnancy were related solely to toxemias no longer obtains. Some do, of course, but many do not. Some come from conditions present long before the gestation; some develop during, but are not part of, the childbearing process; some are aggravated by the pregnancy; and others are the result, or by-product, of the medical and surgical procedures utilized in modern obstetrics. It is no longer necessary to demonstrate a complete hemiplegia, a frank, classic upper motor lesion, to indicate that cerebral involvement has developed. The small diagnostic signs employed by those who are constantly on the lookout for early evidences of brain tumor are sufficient. A widened palpebral fissure, a flattened nasolabial fold, failure of one platysma to contract, decomposition of fine movement of one arm, or a larval Babinski or Hoffmann sign are all meaningful. The ophthalmoscope is increasingly useful; the electroencephalogram may reveal a dysrhythmic record or a slow wave focus; the angiogram may demonstrate an aneurysm, thrombosis, or tumor; the pneumoencephalogram or ventriculogram may show a distorted ventricular system; and a radioisotope test may reveal a high radioiodine uptake in a given area in the brain, frequently the zone of a neoplasm. Studies of the urine, blood chemistry, and blood pressure are as invaluable as ever, but now one may not stop with these. In this day of medical teamwork, it is often necessary to employ the services of neurological colleagues. One of the gratifying asides of this study has been the accuracy of the observations of the clinical clerks, interns, and residents on the obstetric service of a university-associated general hospital, part of a school in which neurological teaching is emphasized. The cases we have selected are illustrations of the principles mentioned above, and much of the credit for the observations belongs to an alert house staff.

REPORT OF CASES

CASE 1.—A 33-year-old woman, gravida 2, para 1, delivered a 7 lb. 13 oz. (3,534 gm.) baby girl. The first stage of labor lasted 12 hours and 20 minutes, the second 44 minutes. Cyclopropane was given for general anesthesia, and episiotomy and outlet forceps were used. Blood pressure during the procedure ranged in the vicinity of 140/80 mm. Hg. Within about 10 hours after delivery, a full right hemiplegia with expressive aphasia developed (see table). After several days the patient's sensorium cleared, and she showed a right hemiplegia with expressive aphasia. There was no agraphia after the seventh day. She could write with her left hand. Speech began to return the 20th day and motion a few days later.

Spinal fluid examination the day after the vascular accident revealed a pressure of 110 mm. Hg, no cells, and a total protein of 76 mg. per 100 cc. Roentgenograms of the skull showed nothing abnormal.

Three months after delivery the first convulsion occurred while the woman was asleep. She was given analeptic medication. Four months later there was a second seizure. Each

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1. Pollock, L. J.: Neuropsychiatry in Relation to Gynecology and Obstetrics, in Obstetrics and Gynecology, edited by A. H. Curtis, vol. 2, Philadelphia, W. B. Saunders Company, 1933.

2. Titus, P.: Management of Obstetric Difficulties, ed. 3, St. Louis, C. V. Mosby Company, 1945, p. 216.

3. Alpers, B. J., and Palmer, H. D.: The Cerebral and Spinal Complications Occurring During Pregnancy and the Puerperium, J. Nerv. & Ment. Dis. **70**: 465, 1929.

4. Harrar, J. A.: The Causes of Death in Childbirth: Maternal Mortalities in 100,000 Confinements at the New York Lying-In Hospital, Bull. of Lying-In Hosp. N. Y. **11**: 257, 1918.

5. Von Hösslin, R.: Die Schwangerschaftslähmungen der Mutter, Arch. f. Psychiat. **38**: 730, 1904.

6. King, A. B.: Neurologic Conditions Occurring as Complications of Pregnancy, Arch. Neurol. & Psychiat. **63**: 471 (March); 611 (April) 1950.

7. Rand, C. W., and Andler, M.: Tumors of the Brain Complicating Pregnancy, Arch. Neurol. & Psychiat. **63**: 1 (Jan.) 1950.

of these started as a Jacksonian fit involving the right side. There have been no seizures since. The picture was that of a cortical encephalomalacia following a vasospastic episode.

CASE 2.—A 19-year-old woman, gravida 1, para 1, delivered a 6 lb. 15 oz. (3,147 gm.) girl after an uneventful pregnancy and labor. The first stage of labor lasted 9 hours, the second 1 hour and 12 minutes. Spinal anesthesia was given, and episiotomy and outlet forceps were used. Four

TABLE 1.—*Development of Right Massive Hemiplegia with Aphasia in Patient in Case 1*

	Time	Blood Pressure, Mm. Hg	Remarks
P. M.	12:04	140/80	Delivery
	12:55	170/108	.....
	1:20	180/80	.....
	1:45	160/76	.....
	2:40	138/52	.....
	3:50	150/70	.....
	4:10	150/70	Extremities rigid, patient not responding
	4:30	158/70	.....
	5:00	148/80	.....
	6:00	146/80	Patient not responding
	7:00	138/80	Recognized husband, no speech
	9:30	120/80	Paralysis on right side noted
	10:30	110/70	Full right hemiplegia with expressive aphasia
	11:30	110/70	.....
A. M.	12:00	106/66	.....
	2:00	120/80	.....

days later during sleep, the woman had a grand mal convulsion. She had had a severe headache that evening. Three more seizures occurred during the same night. The status epilepticus was interrupted by amobarbital (Amytal) sodium given intravenously. Two seizures followed on the fifth postpartum day and two on the sixth. These were all of the grand mal variety. On the 10th day, there was a psychomotor attack. The only abnormal finding was a suggestive left Babinski sign. An electroencephalogram showed a slow wave right frontal lobe focus (fig. 1). A roentgenogram of the skull was normal. The spinal fluid was under a pressure of 110 mm.

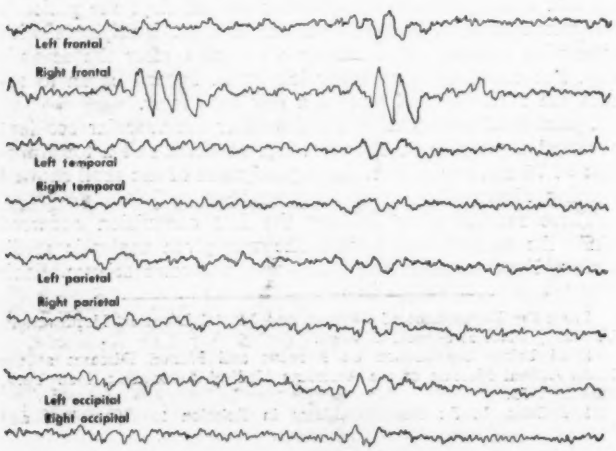

Fig. 1 (case 2).—Electroencephalograms indicating a slow wave right frontal focus.

Hg, contained no cells, and showed total protein 34.5 mg. per 100 cc. Serologic examination showed nothing abnormal. The colloidal gold curve was 1111100000.

The patient has been receiving analeptic medication, and there have been no seizures to date, some 9 months. Her history showed nothing suggestive of epilepsy or migraine in her family background. Her gestation was normal, and she was normotensive throughout the prenatal and postnatal periods (blood pressure 110-120/80-90 mm. Hg). The urine was always normal. During the status epilepticus, the systolic pressure was recorded as high as 164 mm. Hg.

CASE 3.—The patient was 21 years old, gravida 1, para 1. Eight days after what appeared to be a normal pregnancy and delivery the woman had a sudden grand mal seizure. This was preceded by a period of inability to speak. Three hours later she had another attack. She was given analeptic

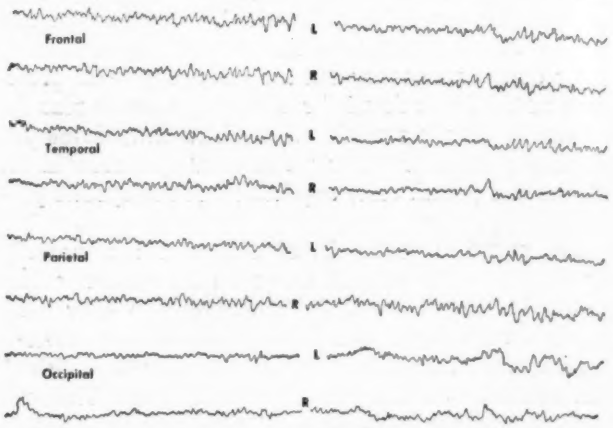

Fig. 2 (case 3).—Electroencephalograms showing low voltage, fast record, with no focal activity and no seizure discharges.

medication and was seizure-free for three weeks when she stopped taking the medication. The attacks recurred. Some were periods of inability to speak; others were frank convulsive seizures that sometimes followed in close succession as in a status epilepticus. Administration of amobarbital sodium intravenously was necessary to stop them.

Examination revealed no gross motor defects, but the deep reflexes on the right side were slightly greater than those on the left. Hoffmann sign was present bilaterally, but there were no Babinski signs. Abdominal reflexes were equally sluggish. There were no sensory defects. The right side of the face was slightly flattened. Skull films and radioisotope studies were normal. The spinal fluid pressure was 100 mm. H_2O. The spinal fluid contained 20 cells per cubic millimeter and 57 mg. total protein per 100 cc. Serologic examination was normal as was the colloidal gold curve. An electroencephalogram revealed a low voltage, fast record, with no focal activity and

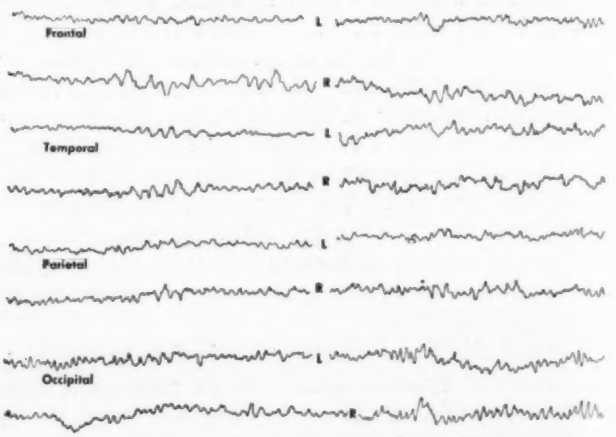

Fig. 3 (case 7).—Electroencephalograms showing a right frontotemporal slow wave focus.

no seizure discharges (fig. 2). The blood pressure while the patient was in the hospital was 150/90 mm. Hg. Blood chemistry studies and urinalysis were always normal. The woman had recurrences of the aphasia episodes as larval attacks, and the right facial paresis persisted. Administration of analeptic medication was continued, and the blood pressure again rose as high as 154/90 mm. Hg. After one year of medication, the spells ceased. The blood pressure now is about 140/80 mm.

Hg. The facial paresis has faded to only a trace. The electroencephalogram remains normal. Reexamination of the pregnancy revealed that there had been one fainting spell at five months, but this had been transient. Blood pressure had always been between 110-120/80 mm. Hg.

CASE 4.—This 34-year-old woman was gravida 1, para 1. She went into hard labor, and, after 10 hours of failure of dilation, a low cervical cesarean section was done. The procedure was well tolerated. All findings were normal. On the 10th postoperative day, a severe headache, with confusion,

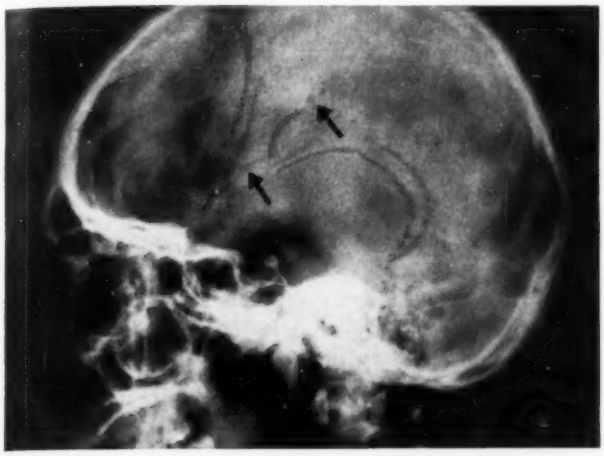

Fig. 4 (case 7).—Roentgenogram of skull showing widened middle meningeal artery (arrows) channel three times wider than the same on the right side.

suddenly developed. Immediate examination revealed a right hemiparesis and mild expressive aphasia. There was no papilledema, but moderate nuchal rigidity was present. A lumbar puncture performed the next day revealed clear fluid, pressure 120 mm. H_2O, no cells, and total protein 40 mg. per 100 cc. Serologic examination was normal. The Lange gold curve was flat. On the third day, pain suddenly developed in the left posterior side of the chest, and the patient went into shock. Her blood pressure fell from 110/70 to 70/40 mm. Hg, and her temperature rose to 101 F. The electrocardiogram was normal, and a pulmonary embolus was suspected. The woman gradually recovered from shock only to have a "shower" of localized recurrences some hours later. Gradually the symptoms cleared. Bishydroxycoumarin (Dicumarol) was given to control development of emboli, but a rigid neck developed and administration of the anticoagulants was stopped. From then on recovery was uninterrupted, and seven months later the woman is symptom-free. All laboratory data, skull films, and urine and blood studies were normal. A diagnosis of cerebral embolism was made.

CASE 5.—A 29-year-old woman, gravida 3, para 2, was admitted because of semicoma. One week prior to this admission, she had had a cesarean section terminating her pregnancy at seven months. There had been renal involvement in two earlier gestations. Some hours before admission she had suddenly become dizzy, lost the use of her left extremities, and had projectile vomiting. Finally she lapsed into coma. Examination revealed a comatose patient with circumorbital edema. There was a hemiparesis on the left side, with spasticity. The Babinski sign was present bilaterally and was greater on the left side. The pupils were small and equal, and there was no papilledema. The neck was rigid, and a positive Brudzinski sign was present. A diagnosis of subarachnoid hemorrhage was made. The spinal fluid was under great pressure, 440 mm. H_2O, and was frankly bloody. A bilateral carotid artery angiogram was made and showed an apparent defect in the posterior communicating artery of the right side; the one on the left side was normal. The blood pressure was high, 170/82 mm. Hg. Urinalysis showed 3+ albumin and an occasional red and white blood cell. Blood nonprotein nitrogen was 19 mg. per 100 cc.; chlorides and carbon dioxide combining power were normal. In the hope of helping the patient, the right carotid artery was ligated. The coma deepened, and the woman died 28 hours after surgery. Autopsy revealed a recent subarachnoid and massive interventricular hemorrhage into the right lateral ventricle. The exact vessel that had ruptured could not be determined. The aorta was arteriosclerotic. The right kidney showed chronic pyelonephritis, and there was acute cystitis.

CASE 6.—A 20-year-old art student was suddenly seized with a severe right occipital headache. She vomited and was brought to a hospital where the diagnosis on admission was "hysteria." The presence of a bilateral Babinski sign, a Hoffmann sign on the left side, and a rigid neck quickly changed the diagnosis to a "possible subarachnoid hemorrhage." The spinal fluid was under increased pressure, 400 mm. H_2O, and was frankly bloody. The protein content was 400 mg. per 100 cc. Serologic examination was normal, and the colloidal gold curve was flat. The coagulation time was 2 minutes 10 seconds and bleeding time 4 minutes 30 seconds. There were 399,000 platelets per cubic millimeter. The condition was never severer on one side than on the other so no angiogram was tried. The meningeal signs cleared after four weeks, and spinal fluid examination performed then was normal. At the time of discharge, the woman showed only some mild cerebellar signs in speech and gait. She was able to continue her painting. Her first baby was delivered by cesarean section, and two and a half years later she delivered a second child vaginally. A pudendal block was done with lidocaine (Xylocaine) hydrochloride, and episiotomy and low forceps were used. The baby was normal. Subsequent neurological examination of the patient revealed the slight cerebellar gait and speech and the nystagmus observed four years earlier.

CASE 7.—The patient, a 31-year-old white woman, was four months pregnant. She complained of headache and "dizzy spells" for six weeks. The "dizzy spells" had occurred frequently for the past few weeks, but the woman had never lost consciousness.

General physical examination was normal; the pulse rate was 88 and blood pressure 90/50 mm. Hg. The uterus indicated a pregnancy of four months. Urine and blood chem-

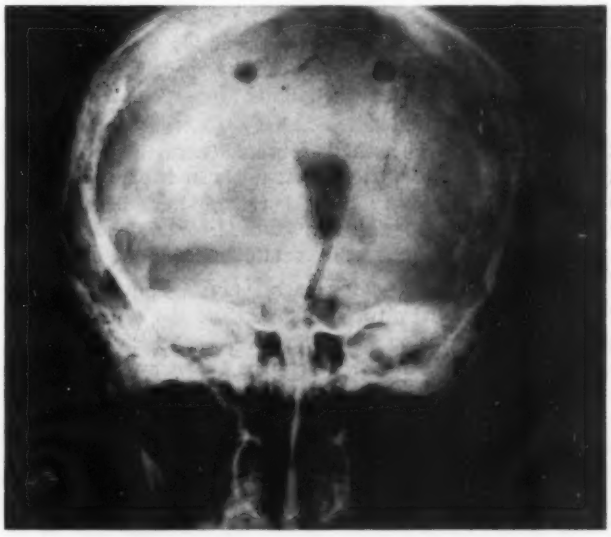

Fig. 5 (case 7).—Ventriculogram showing a shift of system toward the left side of the skull.

istry studies were without note. Neurological examination revealed slight decomposition of fine movements of the left arm and left lower limb and minimal facial paresis of lower two-thirds of the left side of the face. There was only flattening of the left nasolabial fold and widening of the palpebral fissure. Deep reflexes were brisk and equal, and there were no abnormal reflexes. The pupils, optic nerve heads, and visual fields were normal. There were no cortical defects then, but, in the next few days, fleeting Jacksonian twitches were

noted in the left side of the face and the left shoulder. The vessels of the left disk seemed to be filling and the hemiparesis increasing. The spinal fluid pressure was under 240 mm. H_2O. The spinal fluid contained protein, 20 mg. per 100 cc., and no cells. Serologic examination and the colloidal gold curve were normal. The electroencephalogram showed a right frontotemporal slow wave focus (fig. 3). The skull film showed a widened middle meningeal artery channel three times the width of its counterpart on the right side (fig. 4).

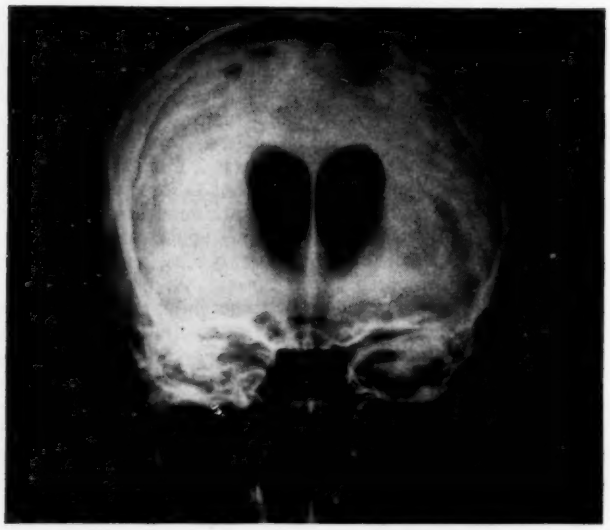

Fig. 6 (case 8).—Ventriculogram showing symmetrically enlarged lateral and anterior portions of the third ventricle.

In view of the increasing engorgement of the vessels of the left optic disk, a ventriculogram was done. This showed a shift of the ventricular system to the left (fig. 5). In view of the large vessel seen on the film, a meningioma was suspected. A right osteoplastic flap was turned, and a huge meningioma about the size of an orange was removed. Postoperatively the woman did very well, except for a rare twitching in the left side of the face. She was given diphenylhydantoin (Dilantin) sodium and phenobarbital.

About five months later, a baby girl was delivered by cesarean section. The child appeared normal, but in two months it was noted that her left thigh tended to cross over. Deep reflexes were very brisk, but there were no other abnormal responses. She is being watched for evidence of cerebral abnormality. The mother continues to do well.

CASE 8.—A 20-year-old woman, gravida 2, para 2, delivered a full-term baby two months before the present admission. Spinal anesthesia had been used, but the woman had had a persistent headache ever since the delivery. At times she saw double. Coughing produced pain down the neck, spine, and arms. This was the second time this patient had had spinal anesthesia for delivery. The previous occasion, one and a half years ago, was not followed by headache.

Examination revealed no gross motor or reflex disturbances, except for a minimal paresis on the right side of the face. Sensation was intact to all stimuli. A bilateral choked disk of 3 diopters was present. The blood pressure was 98/50 mm. Hg. A roentgenogram of the skull revealed that the pineal gland was exactly in the midline. A ventriculogram revealed symmetrically enlarged lateral and anterior portions of the third ventricle (fig. 6). The suprapineal recess appeared to be larger than normal. The foramens of Monro were enlarged, but the posterior portion of the third ventricle was not visualized (fig. 7*A*). The findings were compatible with an obstruction, probably a tumor, in the third ventricle. Accordingly a Torkildsen's operation was done and a no. 10 French catheter inserted to connect the left lateral ventricle with the cisterna magna (fig. 7*B*). The patient's headaches subsided, and her vision improved.

COMMENT

Of these eight patients, only one died. Although she was only 29 years of age, the autopsy revealed arteriosclerosis of the aorta and chronic pyelonephritis. The woman also had had a massive cerebral hemorrhage that ruptured into the lateral ventricle. Her hypertension had been moderate and precautions taken, a cesarean section in the seventh month, but these were to no avail. What appeared to be a good result at the surgery vanished one week later when the vessel ruptured. Our experiences in neuropathology would suggest that this vessel was in an area of encephalomalacia and probably had damaged walls.

The patient in case 1 must have had a massive thrombosis, with a large area of softening, in the postpartum period. The hypertensive symptoms appeared within the first hour after delivery and lasted 6 to 7 hours. The nature of the recovery of motion and speech seems to exclude the presence of a large hemorrhage, but the

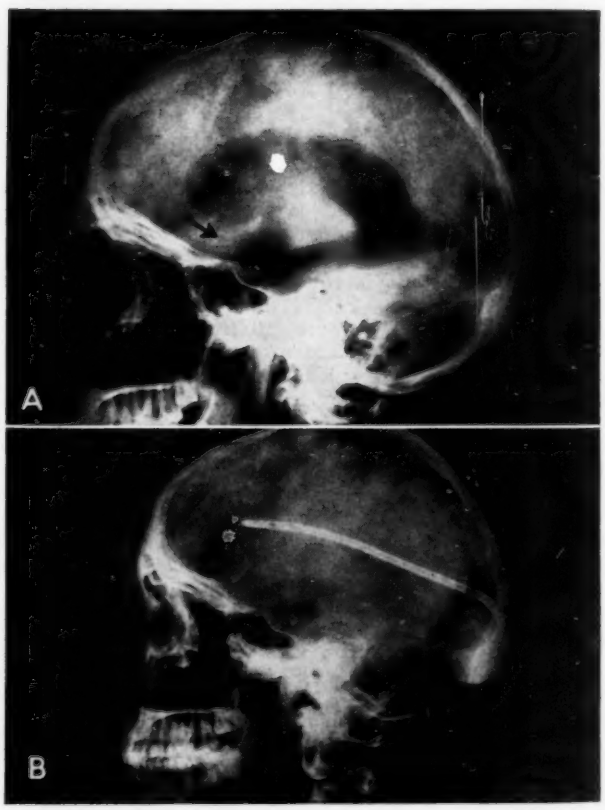

Fig. 7 (case 8).—*A*, roentgenogram showing that posterior portion of third ventricle was not filled (arrow), and, *B*, roentgenogram taken after Torkildsen's operation showing no. 10 French catheter connecting left lateral ventricle with cisterna magna.

epileptic focus was established and required analeptic medication for control. Certainly she should avoid future pregnancies.

The patients in cases 2 and 3 face a problem. Each is now in her beginning twenties. Each has only one child and wants more. Should either become pregnant? The

patient in case 2 experienced a status epilepticus lasting for three days and occasional seizures persisting for three more days. Her electroencephalogram shows a definite focus, and clinically she showed a Babinski sign for weeks. The patient in case 3 had several seizures, that is, attacks of aphasia for over a year. She shows neurological evidence corresponding to this localization. Although her electroencephalogram reveals no dysrhythmia, her constitutional makeup and vascular response is that of the future hypertensive. Further pregnancies are definitely a risk from the neurological standpoint.

The development of emboli in case 4 was incidental to the cesarean section. Whether the emboli appeared after being filtered out in the lung and after the fragments broke into the systemic circulation cannot be determined. Certainly there were pulmonary emboli. The role of the vertebral veins as a route from the pelvis to the brain has been described by Batson.[8] Nuchal rigidity was a prominent symptom in this case and suggests that pathological conditions had been developing along the base of the skull. The British school[9] has emphasized the role of thrombosis of the venous sinuses in the production of hemiplegia after delivery. Martin thinks that bits of blood clot are carried from the pelvic veins, by way of the paravertebral plexus, to the cranium. In the patient in this case (case 4) the convulsions and the papilledema usually accompanying the picture of venous thrombosis did not develop. The danger in the use of anticoagulants in the presence of cerebral involvement is well illustrated here; the use of bishydroxycoumarin produced a recurrence of the nuchal rigidity (possibly due to blood seepage through damaged vessel walls).

The patient in case 6 had a previous subarachnoid hemorrhage. Her first pregnancy was completed successfully with the aid of a cesarean section, the second with a pudendal block. In neither instance was the patient permitted to strain or bear down much; this was in order to prevent an increase in intracranial blood pressure. Pregnancy in such a patient is definitely a risk, and the danger of blowing out the aneurysm is great; however, when pregnancy does occur, every aid must be given these patients.

The two patients with brain tumor present different problems. It is the consensus of most investigators that meningiomas and neurinomas increase in size during pregnancy. Angiomas become engorged, develop thrombi, and hemorrhage. The diagnosis of meningioma in the patient in case 7 seemed quite evident, but the Jacksonian seizures and the beginning papilledema made surgery imperative. The operation was quick and relatively easy so this cannot be associated with possible damage to the child. In contrast, in case 8 the patient came for care post partum. She undoubtedly had a tumor of the third ventricle. The course would suggest a benign lesion, possibly a paraphysial cyst. Such tumors are often pedunculated and hang from the roof of the ventricle. The spinal puncture for anesthesia probably caused the tumor to push down posteriorly in a ball-valve action, thereby choking off the cerebral aqueduct. The Torkildsen's procedure circumvents the block and restores cerebrospinal fluid circulation.

It may be pointed out that four of the seven patients surviving are now suffering from a chronic convulsive state. While analeptic medication fortunately controls all of them, the grave significance of cerebral complications associated with pregnancy is clearly established.

SUMMARY AND CONCLUSIONS

Cerebral complications associated with pregnancy are commoner than usually admitted and may occur under the best obstetric management. Such conditions may be related to the process of gestation, may be accompaniments of procedures utilized in obstetric practice, or may be entirely coincidental. Illustrative cases of hypertensive vascular accidents with encephalomalacia, frank hemorrhage into the brain, subarachnoid hemorrhage, thrombosis, and embolism are presented. Two cases of brain tumor are described. One appeared and was operated on during pregnancy; the other occurred after delivery. The importance of careful neurological review of unusual obstetric cases is emphasized particularly, because cerebral complications are dangerous and are often the basis for a future convulsive state.

303 E. Chicago Ave. (11) (Dr. Boshes).

8. Batson, O. V.: Function of the Vertebral Veins and Their Role in the Spread of Metastases, Ann. Surg. **112**: 138, 1940.

9. Collier, W.: Thrombosis of the Cerebral Vein, Brit. M. J. **1**: 521, 1891. Martin, J. P.: Thrombosis in the Superior Longitudinal Sinus Following Childbirth, ibid. **2**: 537, 1941. Martin, J. P., and Sheehan, H. L.: Primary Thrombosis of the Cerebral Veins Following Childbirth, ibid. **1**: 349, 1941. Symonds, C. P.: Cerebral Thrombophlebitis, ibid. **2**: 348, 1940.

Dental Caries.—With the large amount of publicity given to the relationship of fluorine in drinking water and the prevention of caries, the much more important relationship of diet and caries is apt to be overlooked. A recent report in Australia . . . serves as a reminder that the real solution of the problem of preventing dental caries is dietetic. Workers from the Institute of Dental Research studied a group of 81 children of European stock of both sexes, living a supervised institutional life. . . . The majority of these children, whose age at the time of examination ranged from 4 to 9 years, had been living in the institution since the earliest months of life. The diet of the children consisted mainly of wholemeal bread, wholemeal biscuit, wholemeal porridge, wheat germ, fruits (fresh and dried), vegetables (cooked and raw), butter, cheese, eggs, milk and fruit juices and practically no meat. This was supplemented with vitamin concentrates, honey or molasses as a sweetening agent on occasion, and nuts. Such items as sugar (white and brown), white flour products and tea, were absent from the diet. As far as possible, food was taken uncooked and/or with a minimum of preparation. An examination of the water supply showed that no fluoride was present. The teeth were examined by mirror and probe supplemented with radiographic examination. It was found that 63 of the group of 81 children were entirely free from dental caries, compared with 4% free of caries in a Sydney group on an uncontrolled diet. The average number of decayed, missing and filled teeth per child was 9.57 for the Sydney group and 0.58 for the controlled diet group (immunity increased approximately 20 fold). . . . This lessening of the caries incidence to 1/20 of that of another Australian group used for comparison is in marked contrast to the results of fluoridation of water supplies which in the U. S. A. appears to reduce caries to about ⅓ of its normal incidence.—Child Health: Diet and Dental Caries, Department of Health, Canberra, Australia, *Health: Journal of the Commonwealth Department of Health*, September, 1953.

PHYSIOLOGICAL BOWING OF THE LEGS IN YOUNG CHILDREN

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and
Ernest H. Watson, M.D., Ann Arbor, Mich.

The developing child is the center of parental adoration as well as a point of critical evaluation by well-meaning relatives and friends. One of the situations in which he is watched and appraised closely is when he begins to stand and walk. Any abnormalities, imaginary or otherwise, observed in the over-all appearance of the child are certain to arouse comment and become a source of worry to the parents. Outward bowing of the lower extremities is a cause of particular concern.

It is recognized anthropologically that virtually all infants have some degree of genu varum deformity that frequently persists into the second or third year of life before normal physiological development converts the mild bowing into an equally mild degree of genu valgum.[1] In some instances the bowing is largely due to normal distribution of adipose tissue, which in infancy tends to be more heavily deposited on the outer surfaces of both the thigh and lower leg, but in most infants some degree of actual osseous bowing is present. Only when the extent of bowing transcends arbitrarily and poorly established limits of normal do diagnostic difficulties arise.

There are numerous explanations for exaggerated bowing of the legs at different age periods but, because such deformity is so classically associated with rickets in the minds of parents and physicians alike, it frequently carries with it the inference that in some manner parents have neglected their growing child. In an attempt to eliminate parental feelings of self-recrimination, physicians usually resort to roentgen examination of the lower extremities for assistance in ruling out such abnormality. This is an admirable and often helpful approach to the problem, but all too often undue pathological importance is attached to the wide variety of anatomic and physiological variants that occur in the plastic, rapidly mineralizing bones of the growing child. As a result, an erroneous roentgenologic diagnosis of rickets or some significant developmental abnormality is made. This complicates the social aspects of the problem, probably initiates costly, time-consuming therapeutic measures that may be entirely unnecessary, and, as has been shown recently, actually entails the risk of inducing hypervitaminosis.[2]

It is our desire to call attention to a rather commonly encountered group of markedly bowlegged children who usually have had an adequate diet, regular vitamin supplements, and a normal environment. They tend to be overweight but, in general, appear perfectly normal. Their parents seek medical care solely because of the pronounced bowing of the legs. We do not know exactly how many of these bowlegged children have been seen at University Hospital, but pertinent follow-up data have been accumulated on 14 such patients, most of whom were referred to the hospital as having rickets. In others, a diagnosis of either rickets or infantile tibia vara (Blount's osteochondrosis deformans tibiae)[3] was suggested by various consultants within the hospital.

The roentgenologic findings in these patients do not appear to be compatible with either rickets or osteochondrosis. To the casual observer, they may seem to be strikingly abnormal, but careful, comparative scrutiny of these findings suggests that they are nothing more than a combination of normal anatomic variants and secondary manifestations of adaptation of skeletal structure to function. The fact that spontaneous regression of the bowing as well as the secondary structural changes occurred in all of the 14 patients supports the contention that many such deformities are physiological and of little clinical significance.

The following brief case reports are representative of the group that was studied. Three of the patients are siblings whose father is a member of the hospital staff. Fortunately the father was not unduly alarmed by the pronounced bowing of his children's legs, and this afforded us an excellent opportunity to observe the relatively rapid regression of the deformities that occurred without any form of definitive treatment whatsoever.

REPORT OF CASES

CASE 1.—The child was born on Jan. 17, 1939, and was seen in this institution for the first time at the age of 18 months on Aug. 20, 1941. The child had started walking at 8 months of age, and at that time the parents noted that there was bowing of the lower extremities. The dietary history in this case was that there was some lack of vitamin D intake during the first year. Orange juice was given frequently. The parents had noted that since the age of 1 year the bowing of the lower extremities had improved. At the time of examination there was a definite genu varum deformity with outward bowing of both tibias. There was no functional abnormality of the legs, and the patient walked well. A roentgenogram (fig. 1*A*) of the lower extremities at that time showed outward bowing of the lower extremities, "broadening" of the zones of provisional calcification, flaring of the medial metaphyses about the knees, wedging and irregular ossification of the distal femoral epiphyses, and pronounced thickening of the inner cortex of the tibias. The patient was seen five years later and, although there was slight residual bowing, there was definite improvement in the degree of the deformity. The child had encountered no difficulty whatsoever.

It is significant that in 1941, the pediatrician, orthopedist, and roentgenologist all agreed that this child had rickets. With the questionable vitamin D intake, it is entirely possible that he did have rickets during infancy, but he certainly did not have roentgenologic signs of

From the departments of radiology and pediatrics, University of Michigan.

Read before the joint meeting of the Section on Pediatrics and the Section on Radiology at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

1. Bohm, M.: Infantile Deformities of the Knee and Hip, J. Bone & Joint Surg. **15**: 574-578 (July) 1933. Blount, W. P.: Bow Leg, Wisconsin M. J. **40**: 484-487 (June) 1941. Geppert, T. V.: Physiological Knock Knee, A. M. A. Am. J. Dis. Child. **83**: 154-155 (Feb.) 1952.
2. Goldzier, S. E., II; Pisacano, J. C., and Wald, A. M.: Hypervitaminosis, J. Pediat. **41**: 198-201 (Aug.) 1952.
3. Blount, W. P.: Tibia Vara: Osteochondrosis Deformans Tibiae, J. Bone & Joint Surg. **19**: 1-29 (Jan.) 1937.

such abnormality at the age of 18 months. The argument that this patient had healed rickets would be more convincing if we had not observed subsequently so many bowlegged children with identical roentgenologic changes—children who had adequate vitamin D intake and no x-ray evidence of rickets in infancy.

CASE 2.—The infant was born at University Hospital on Dec. 21, 1947, the result of a normal pregnancy and delivery. He was breast fed, and adequate vitamin supplements

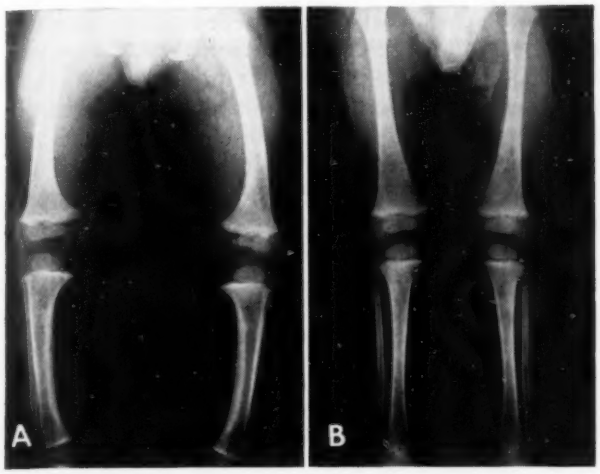

Fig. 1.—*A*, profound bowing of lower extremities of 18-month-old child who was otherwise normal. Femoral and tibial metaphyseal flaring, thickening of medial tibial cortex, widening of medial portions of provisional calcification zones, and wedging of epiphyses are structural changes secondary to the bowing. Fragmentation of medial femoral epiphyses merely represents normal variation in rapidly mineralizing growth centers. *B*, legs of a normal, thin, slightly knock-kneed child of approximately same age for comparison with *A*. The secondary structural changes and anatomic variants described above are absent.

were given. Growth and development progressed normally, and there was no serious illness. On July 11, 1949, he was brought into the pediatric outpatient department because friends of the family thought he was "bowlegged." Roentgenograms exposed at the age of 18 months showed definite outward bowing of both lower extremities, with thickening of the medial cortex, flaring of the medial metaphyses, and wedge-shaped development of the distal femoral epiphyses (fig. 2*A*). The epiphyseal lines were normal, and there was no evidence of abnormal bone growth. The patient was again seen here at the age of 3½ years on May 28, 1951. At that time roentgenograms of the lower extremities showed definite improvement in the degree of bowing of the lower extremities and normal development about the ends of the long bones of the lower extremities. The activity of this child had been restricted in no way, and the previously noted bowing largely disappeared with advancing growth. Recent check-up examination on March 13, 1953, showed still further straightening of the legs (fig. 2*B*).

CASE 3.—This child is a full brother of the patient in case 2. He was born on May 13, 1950, and was also the result of a normal pregnancy and delivery. He was put on the usual dosage of multivitamin (Abdec) drops upon discharge from the hospital and was followed repeatedly in the pediatric outpatient department of this institution. At the age of 1 year on May 28, 1951, it was noted that he had definite bowed legs (fig. 3*A*). Films of the lower extremities showed changes very similar to those in cases 1 and 2. There was marked bowing of the lower extremities, with flaring of the medial metaphyses about the knees and definite thickening of the inner aspect of the cortices. Subsequent examination on April 9, 1952, including roentgenograms of the lower extremities, showed persistence of the bowing with the characteristics unchanged except for the progress of growth. The most recent examination on May 13, 1953, showed dramatic improvement, both clinically and roentgenologically (fig. 3*B*).

CASE 4.—The child is a full brother of the patients in cases 2 and 3. He was born on July 13, 1951, and was also the result of a normal pregnancy and delivery. At the time of discharge from Maternity Hospital there was no evidence of abnormality. The child was followed in the pediatric outpatient department, and on Jan. 25, 1952, at the age of 6 months, moderate bowing of the lower extremities was noted. Roentgenograms were exposed, and again the moderate flaring of the medial metaphyses about the knee together with of the inner thickening tibias was noted. There was no evidence of rickets at the all-important metaphyseal-epiphyseal junctions. Reexamination on May 13, 1953, showed appreciable improvement in the degree of bowing.

CASE 5.—The boy was born on July 2, 1948, the first child of healthy young parents. Pregnancy and delivery were normal. Daily administration of multivitamin drops was started at 1 week of age. Growth and development were normal; actually both were somewhat accelerated. The infant walked at 9 months. The child had had continuous and adequate medical supervision, but was brought to one of us (E. H. W.) at 15 months because the neighbors strongly urged the mother to see what was wrong with his legs. The mother had not been concerned, particularly because she had been told that she too was quite "bowlegged" as a young child. In fact, the patient's grandmother had advised ignoring the bowing. The patient's mother had "outgrown" her early bowlegged state in a few years according to family history. Roentgenologic examination of the legs showed outward bowing of both tibias, with secondary changes similar to those cited in the previous case reports—changes we have come to regard as variations of normal bone growth rather than evidence of rickets or osteochondrosis. The calcium, phosphorus, and phosphatase levels were respectively 14.3 mg., 5.8 mg., and 10.9 units per 100 cc. at the time the child was first seen and at a time when the bowing was maximal. No special therapy was given, but by 5 years of age the bowing had completely disappeared.

The familial aspect of bowlegs, exemplified by cases 2, 3, 4, and 5, seems to be well established. Very likely, this fact is of no greater significance than similar minor familial tendencies such as protruding ears, a large nose, or prominent supraorbital ridges.

Fig. 2 (case 2).—*A*, lower extremities of healthy 18-month-old boy. There is pronounced bowing at the knees, thickening of medial tibial cortex, flaring and recurring of medial metaphyses at the knees, and wedging of distal femoral epiphyses. *B*, same child at age 5 years. The clinically straight legs have a normal radiological appearance. Most of this spontaneous improvement occurred before the age of 4 years.

COMMENT

As can be readily seen by the representative cases just described, the roentgenographic appearance of patients with physiological bowing is a rather constant one. In the entire group of 14 cases, there was outward bowing, which usually involved both femurs and tibias. In one

instance the degree of involvement of the femurs exceeded that of the tibias, and in another the reverse was true. In all cases there was thickening of the inner diaphyseal cortex of the femurs and tibias in approximate proportion to the degree of bowing present. The distal femoral epiphyses were triangular rather than oval in shape, with the medially directed apex of each triangular epiphysis often fragmented in appearance. Similar alterations in the shape of the tibial epiphyses were

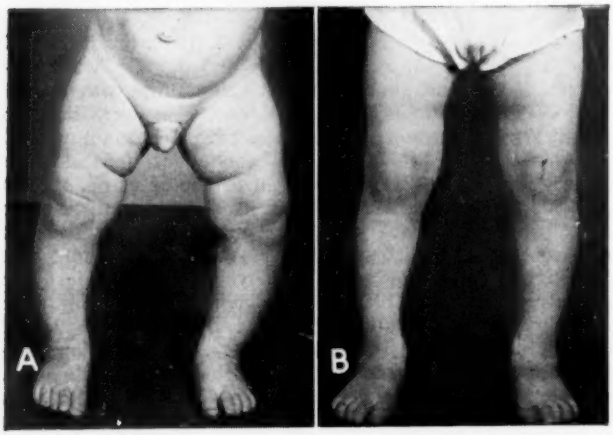

Fig. 3 (case 3).—Healthy brother of patient in case 2, with marked bowing of legs. The photographs show the appearance of legs at age 10 months (*A*) and 3 years (*B*). The straightening occurred spontaneously.

much less frequently observed. Accentuated flaring of the medial metaphyses of both the femurs and tibias at the knees was a constant finding, and here also the changes usually were more pronounced in the femurs than in the tibias. In some patients there seemed to be actual overgrowth of bone in one or both medial femoral metaphyses, producing a bulbous appearance and posterior spurring not observed in the tibias (fig. 4). Often associated with outward bowing of the legs was a varying degree of internal angulation of the distal tibial metaphysis along with minimal wedging of the adjacent epiphysis. In no instance was there convincing roentgenologic evidence of rickets, osteochondritis, dyschondroplasia, osteogenesis imperfecta, neurofibromatosis, or any other pathological condition that might account for the changes seen.

As far as we have been able to determine, there are only two references to bowing of the type described in American radiological literature. One of these is in Pugh's [4] recently published book on bone disorders, in which the subject is briefly discussed in conjunction with rickets. Although Pugh states that the etiology of this type of genu varum is unknown, "there is great probability that it is not a result of rickets." To this statement, we heartily subscribe. Having observed patients as young as 6 months of age who eventually exhibited the roentgenologic changes described above and having followed various patients for periods of 2 to 10 years, we are convinced that the bowing is nonrachitic. The history of adequate vitamin D intake, coupled with normal results of serum calcium, phosphorus, and alkaline phosphatase determinations as well as the total absence of roentgenologic signs of rickets at the all-important epiphyseal-metaphyseal junctions simply makes such a diagnosis untenable. So-called refractory or resistant rickets is ruled out by the progressive, spontaneous improvement that, in our experience, inevitably occurs. Resistant rickets just does not behave in such a manner.

The other reference is by Barber,[5] who reports the case of a 17-month-old child, under the title of osteochondrosis deformans tibiae, with roentgenologic changes identical to those described herein. By way of review, osteochondrosis deformans tibiae or tibia vara are the pathological and descriptive anatomic terms respectively applied by Blount [3] to a form of ischemic necrosis that classically involves one or both medial tibial plateaus of growing children. Both the tibial epiphysis and the metaphysis are apt to show grossly irregular ossification resulting in pronounced localized deformity, a metaphyseal beak, and a rather characteristic angular genu varum rather than diffuse generalized bowing. There may also be so-called back-knee and internal rotation of the lower legs. It is true that Blount, in his excellent, well-detailed article, reported an infantile form of the disease characterized by (1) medial wedging of the proximal tibial epiphysis, (2) a medially expanded, sometimes irregular epiphyseal line, (3) abrupt angulation just below the proximal tibial epiphysis, (4) a prominent, beak-like, recurring medial tibial metaphysis, and (5) cartilage islands within the beak. In his review of 28 cases of tibia vara, accumulated from his own and observations by others, Blount classified 20 of them in the infantile category. Tracings of roentgenograms of the knees are included, and only Blount's patient A. J. and Rall's patient in case 2 fail to show the gross, localized metaphyseal irregularity emphasized by the author. These two patients show instead the roentgenologic changes that we would like

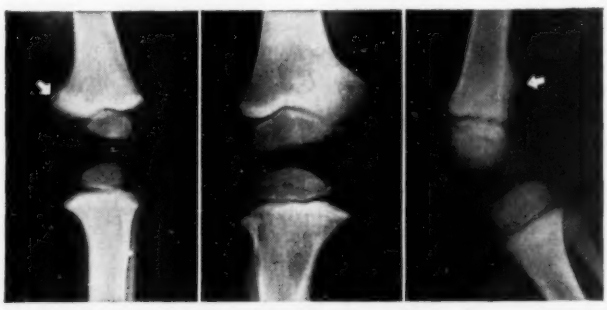

Fig. 4.—Normal variations in ossification as seen in the knees of three different patients with physiological bowing of legs. Such transient vagaries in development should not be construed to represent significant disease.

to regard as physiological. Interestingly enough, Blount treated his patient A. J. only by observation, and the bowing disappeared spontaneously. It should be mentioned to the credit of Blount and others that the importance of differentiating true tibia vara from physiological bowing has been subsequently stressed. Clinically, physiological bowing seems to be well recognized. Roentgenologically, there still is considerable evidence of confusion and uncertainty.

4. Pugh, D. G.: The Roentgenologic Diagnosis of Diseases of Bones, New York, Thos. Nelson & Sons, 1950.
5. Barber, C. G.: Osteochondrosis Deformans Tibiae, Am. J. Roentgenol. **42**: 498-502 (Oct.) 1939.

In 1942 Barber [6] again reviewed the subject of osteochondrosis deformans tibiae, emphasizing that it was the commonest cause of bowleg deformity in his community. He conceded that some of the infants with the condition recover spontaneously, but stated that "the roentgenographic features of the infantile type gradually change to those of the adolescent type, so that the two can be distinguished later only by the history." In the 14 patients whom we have followed, most of them with clinical and roentgenographic signs identical to those of Barber's patient W. R., no such thing has occurred, the changes having gradually regressed with normal growth. It is significant that, in the discussion of Barber's article, Blount pointed out that patient W. R. is a variant, implying that the condition is not true tibial osteochondrosis. He goes further to state that all patients of this type observed by him have recovered spontaneously.

As one reviews subsequent articles in conjunction with personal experiences during the past decade, it becomes increasingly obvious that many instances of nonrachitic bowleg deformity are being regarded as examples of Blount's osteochondrosis when, in all probability, they are not. Chapple [7] hints at skepticism similar to our own by illustrating roentgenographically the slight differences between what he calls a "normal" leg with poor weight-bearing alignment and so-called osteitis tibiae. Admittedly we do not have histopathological proof that metaphyseal and epiphyseal ossification in these patients is entirely normal, but circumstantial evidence is heavily in favor of it being normal, and there seems to be no recorded pathological evidence to the contrary. Actually, Blount reported the only biopsy evidence of defective osteogenesis in a case of osteochondrosis deformans tibiae. One has only to review his original article to recognize unmistakable differences in the roentgenologic appearance of this patient and that of the many examples of infantile bowing that, for one reason or another, have been erroneously included in this category. The chief differences are that in osteochondrosis one finds a more prominent, often blunted metaphyseal beak, areas of rarefaction within this beak, and localized irregularity of the metaphyseal contour.

It is becoming increasingly evident that there is great variability in the roentgenologic appearance of developing long bones in the growing child. Minor irregularities in the ossification of normal epiphyses are legion. Metaphyseal flaring, spurring, or beaking must be carefully defined and accompany more significant structural changes before they can be regarded as bona-fide evidence of disease. Thickening of cortical bone on the concave side of a curved tubular bone is roughly proportional to the extent of curvature; hence it must be largely a natural compensatory buttressing effect. Incidentally, thickness of the medial tibial cortex, as well as metaphyseal flaring and sloping, may vary greatly at birth, as shown by survey roentgenograms of 30 normal newborn infants obtained by us as part of this study.

Internal angulation of the distal tibial epiphysis and metaphysis may be more apparent than real as the result of improper positioning of the patient. Even when actually present, such angulation is thought to be another secondary manifestation of the bowed tibia and of doubtful clinical significance. Wiles [8] has discussed this "obliquity of the tibial epiphysis" from an orthopedist's viewpoint, stating that at times no cause can be found and that there is often spontaneous improvement with growth. A mild, localized chondrodysplasia has been considered as a possible cause of the changes in the distal tibia as well as those at the knee, but the absence of dwarfism and convincing, corroborative roentgenologic signs makes such an explanation unlikely.

One naturally wonders about the relationship of physiological bowing to prenatal bowing of the tubular bones resulting from mechanical pressure of other fetal parts in utero as described by Caffey.[9] In general, prenatal bowing is more sharply localized, is associated with soft tissue dimpling and congenital deformities of the hips or feet, is readily recognized in the neonatal period, and shows progressive improvement dating from birth. Despite these obvious differences, it may be that the intrauterine forces are at least indirectly responsible for determining the degree of physiological bowing. O'Connor,[10] among others, believes that some degree of internal tibial torsion is physiological in all newborn infants, and is a reflection of mechanical uterine pressure exerted upon the fetus in the position of comfort. He emphasizes that one cannot have internal tibial torsion without having associated bowing of the legs on weight bearing. Thus, one immediately perceives a plausible explanation as to cause and effect. If physiological internal torsion is accentuated, then physiological bowing will be similarly accentuated and both will persist beyond infancy. If the child is overweight or walks early, the bowing will be even more pronounced, and confusing secondary roentgenologic changes will occur.

Howorth [11] likewise points out that bowleg deformity in infancy is commonly associated with internal torsion of the tibias and cautions that, although the bowing usually corrects spontaneously, the torsion is apt to persist, producing intoeing. Although all of the 14 patients included in our study had some degree of intoeing that appeared to correct itself with growth, undoubtedly there are instances of bowing with persistent internal torsion that require orthopedic measures for correction. We do not presume to establish criteria for either operative or nonoperative correction of these deformities; we merely wish to emphasize the wisdom of considering the numerous examples of spontaneous regression that take place and to minimize the many normal roentgenologic variants that are often misinterpreted.

SUMMARY AND CONCLUSIONS

Exaggerated bowing of the lower extremities occurs with surprising frequency in apparently healthy, well-nourished infants and children. The deformity, usually

6. Barber, C. G.: Osteochondrosis Deformans Tibiae: Nonrachitic Bow Leg in Children, Am. J. Dis Child. **64**: 831-842 (Nov.) 1942.

7. Chapple, C. C.: Orthopedic Pediatrics, in Nelson, W. E., editor, Mitchell-Nelson Textbook of Pediatrics, Philadelphia, W. B. Saunders Company, 1950.

8. Wiles, P.: Essentials of Orthopedics, Philadelphia, the Blakiston Company, 1949.

9. Caffey, J. T.: Prenatal Bowing and Thickening of the Tubular Bones, with Multiple Cutaneous Dimples in Arms and Legs: Congenital Syndrome of Mechanical Origin, Am. J. Dis. Child. **74**: 543-562 (Nov.) 1947.

10. O'Connor, S. J.: Personal communication to the authors.

11. Howorth, M. B.: A Textbook of Orthopedics, Philadelphia, W. B. Saunders Company, 1952.

recognized in the immediate postambulatory period, is generally not due to rickets, osteochondritis, or serious developmental fault. It is thought instead to be the result of delayed resolution of normal, physiological bowing that is present to some extent in all infants. In most instances the prognosis for complete, spontaneous regression of the bowing is excellent, the legs usually having straightened by the age of 4 or 5 years. Roentgenologic examination is imperative to rule out significant metabolic disease, but results of such examination may be misleading. Particular attention is directed to the confusing mechanical structural changes and exaggerated anatomic variants that are the result—not the cause—of the bowing.

BILATERAL ADRENALECTOMY FOR SEVERE HYPERTENSION

Ralph F. Bowers, M.D., Memphis, Tenn.

Medical management that employs diet, rest, drugs, and psychotherapy has proved to be quite satisfactory in the treatment of essential hypertension without organic changes. Sympathectomy has been extensively used when minimal organic changes appear. It has ameliorated symptoms but lowered the pressures to normal in a varying low percentage of the patients operated on, regardless of the extent of resection. It is attended with stage procedures and, even in the best hands, morbidity and mortality. This operation obviously leaves much to be desired. If it is used in the presence of extensive organic changes, morbidity and mortality rise in proportion to the magnitude of the organic changes. Consequently, operative treatment is sought for the group of patients in whom medical therapy has failed, sympathectomy has failed, or the organic changes are so extensive that sympathectomy cannot be safely considered. A considerable number of these patients are seen at Kennedy Hospital.

Green [1] and later Zintel and others [2] have employed bilateral partial adrenalectomy for this group with some degree of success. The profession accepts the fact that partial bilateral adrenalectomy is the procedure of choice in adrenal cortical hyperfunction (Cushing's disease). Priestley and others [3] have demonstrated that the ability to lower the pressure in this disease depends on leaving a small amount of adrenal tissue in the body. The adrenal is involved in adrenal cortical hyperfunction, but not in ordinary hypertension. It was decided to attempt a betterment of the fate of these patients by bilateral partial adrenalectomy, and a protocol was established for this investigation.

PROTOCOL

The indications for this operation are: (1) malignant hypertension that cannot be controlled by medical therapy, (2) chronic hypertension with marked organic changes, or (3) Cushing's syndrome. The patients are selected on the basis of the involvement of the four systems in arbitrary terms of 0 to 4+. Briefly, the majority of the patients are in the Smithwick 4+ group or beyond that if possible. All patients are considered by Dr. Fred Knox, the cardiologist, to be near the last year of their life, although prognosis in hypertension cannot be calibrated as definitely as this would intimate. Other competent physicians who have seen these patients agree with the general opinion of a state of desperation, as predicted by Dr. Knox.

Experience has taught us some pertinent facts about the indications. Marked arteriosclerotic changes, choked disk, and blindness are not contraindications. One survivor, who preoperatively could not distinguish light from dark, has recovered from total blindness and his choked disk has disappeared since the operation. Cardiac failure, if it can be temporarily controlled medically, is not a contraindication, regardless of the apparent severity. A few survivors had experienced episodes of coronary thrombosis preoperatively. Encephalopathy with confusion, memory defects, disorientation, and single or multiple cerebral vascular accidents are not contraindications. One survivor had experienced six "strokes" before operation. The one definite contraindication is the degree of function in the nephrosclerosing kidney. A few patients with poor kidney function were lost before its importance was clarified. Low concentration and particularly urea clearance below 50% of normal establish definite contraindication and, after two years' experience, show us that operation cannot be safely done. A study of the operative deaths reveals poor kidney function as a grave prognosis. It is correct to state that any hypertensive patient who can tolerate an operation of the magnitude of cholecystectomy and whose kidney function is not less than 50% of normal can survive the bilateral partial adrenalectomy in two stages, barring technical accidents, which with experience become rare indeed.

Preoperative care has been simplified. Ordinary preparation is all that is required for the first stage. The second stage required cortisone and desoxycorticosterone acetate (DOCA) therapy, much like that described by Huggins and Scott.[4] Attempts with different time levels finally suggested a 32 hour plan as follows. In preparation for operation on Wednesday at 8 a. m., for example, cortisone would be given, in 50 mg. doses, on Monday at midnight; on Tuesday at 6 a. m., 12 noon, 6 p. m.,

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From the General Surgical Service, Medical Teaching Group, Veterans Administration Hospital (Kennedy).

Read before the Section on Surgery, General and Abdominal, at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

1. Green, D. M.; Nelson, J. N.; Dodds, G. A., and Smalley, R. E.: Bilateral Adrenalectomy in Malignant Hypertension and Diabetes, J. A. M. A. **144**: 439-443 (Oct. 7) 1950.

2. Zintel, H. A., and others: Subtotal Adrenalectomy in the Treatment of Patients with Severe Essential Hypertension, Ann. Surg. **134**: 351-360 (Sept.) 1951.

3. Priestley, J. T.; Sprague, R. G.; Walters, W., and Salassa, R. M.: Subtotal Adrenalectomy for Cushing's Syndrome: A Preliminary Report of 29 Cases, Ann. Surg. **134**: 464-475 (Sept.) 1951.

4. Huggins, C., and Scott, W. W.: Bilateral Adrenalectomy in Prostatic Cancer: Clinical Features and Urinary Excretion of 17-Ketosteroids and Estrogen, Ann. Surg. **122**: 1031-1041 (Dec.) 1945.

and midnight; and on Wednesday at 6 a. m., making a total of 300 mg. of cortisone. Five milligrams of desoxycorticosterone acetate should be given at 6:00 a. m. Wednesday. It is to be noted that the administration of cortisone and desoxycorticosterone acetate, as outlined above, has not elevated systolic and diastolic pressure in any patient beyond the top high pressures and has not brought about any deleterious effects, symptomatically or organically.

Method.—The operation usually requires two stages. The left side is operated on first, and a remnant of left adrenal gland about the size of the finger nail on the little finger is allowed to remain at the lower pole where the main vessels enter the gland. Viability of the remnant has been achieved in all except two patients who are regarded as having had total removal of the adrenals. At a later time, after two weeks to three months, depending on the condition of the patient and height of pressure, the right adrenal is totally removed. The plan involves function of the remaining stump after the second operation, when the hypoadrenal state is induced.

In this study, anterior abdominal (subcostal) incisions have been used. There was one bilateral adrenalectomy performed in one stage because of the desperate condition of the patient. The anterior incision permits palpation of both adrenals via the left subcostal incision, a desirable state in estimating the accuracy of the "no adrenal tumor case." The adrenal gland is anterior to the upper pole of the kidney, and it is easily available by these incisions. The operator can see the glands in entirety, and if they are fragmented during removal he can be certain that all fragments are removed, that only the desired amount of the left adrenal is left in place, and that it has a proper blood supply. Average operating time for the left side is 55 minutes and for the right side, 45 minutes. These time estimates include the entire operation including skin closure. The few technical errors are directly attributed to the inexpertness of the operator in the earlier cases. Two splenectomies were necessary because of injury to the splenic vein in the second and third cases. It is not necessary to place the patient in a bizarre position, and no ribs are removed.

Arbitrary Classification of Lesions in Twenty-Seven Cases

	System			
Intensity	Eye	Cardio-vascular	Brain	Kidney
0	..	..	4	1
1+	2	7	6	10
2+	9	7	5	4
3+	12	11	3	10
4+	4	2	9	1
?	..	..	..	1

Most adrenalectomies are done via the posterior lumbar approach. Cahill,[5] the urologist, is an exception. Transfusions were administered in only two (technical errors) of the 27 cases. The loss of blood is minimal, and morbidity and mortality from the approach have been practically nil.

Postoperative Care.—The immediate postoperative care has been simplified, so that only cortisone, 50 mg. every six hours, is given, and, since the introduction of the 32-hour, second-stage preparation, no terrifying hypotensive episodes have been experienced. Patients now tolerate the second stage very much like an appendectomy. The pressures remain elevated, and, around the fourth to seventh day, reduction in cortisone dosage is started. The method varies from spacing the medication every eight hours, every 12 hours, or in reducing the 50 mg. dosage to 25 mg., and then, always watching for the hypoadrenal state, the dosage is lowered to 25 or 50 mg. per day. Often the blood pressure will lag in its reduction, compared to the reduction of cortisone

Fig. 1.—Normal adrenal removed at operation. The small fragment indicates the approximate size of remnant at lower pole of left adrenal.

dosage. Sometimes it is necessary to withdraw all cortisone medication, if the patient can tolerate it, to induce the desired normotensive condition. But the patient must be carefully observed and vigorously treated if hypoadrenalism appears in any marked degree. The incisions are usually thoroughly healed by the 15th to 21st day, when the patient is returned to the cardiology section for maintenance management. Wound healing is observed to be delayed but not markedly altered. Infection of the incision has not been observed except in one instance, and this was mild and it was easily and promptly corrected.

Results.—An operation has been performed, or attempted, in 27 patients. Eleven were suffering from malignant hypertension, 15 had chronic hypertension, and there was one patient who had pituitary basophilism (Cushing's syndrome).

There were six postoperative deaths, and four patients have died after the postoperative recovery period. These deaths occurred at six and a half weeks, three months, five and a half months, and seven and a half months after the operation.

Twenty of the 21 survivors have shown a return to normal pressures, recorded when the hypoadrenal state

5. Cahill, G. F., and others: Adrenal Cortical Tumors, Surg., Gynec. & Obst. **62**: 287-313 (Feb., no. 2A) 1936.

was regarded as not significantly alarming. One of the patients who died later (case 1) showed a lowering of pressures from 230/130 to 190/110 mm. Hg. Although the pressures were lower than the preoperative levels, this patient is classified as failure as far as blood pressure reduction is concerned.

It must be borne in mind that any of these patients will undergo hypertensive states if large enough amounts of cortisone are given. Also the hypoadrenalism can be overcome by cortisone administration, but sometimes the desired lowering of pressure is not elicited. Obviously, it is the striking of a balance that involves mild nondistressing hypoadrenalism and at the same time permits normal or near normal blood pressures. A few patients are kept mildly hypertensive (170/100 mm. Hg) because it has been observed that they are greatly improved and live happier lives with this slightly elevated pressure. This, too, is a problem of the maintenance management.

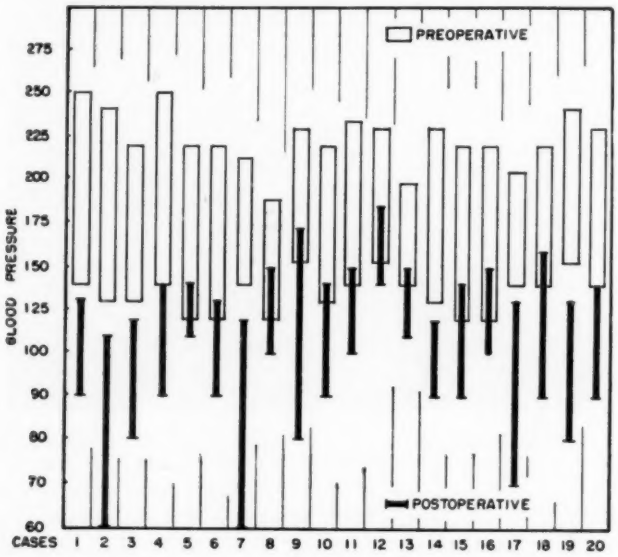

Fig. 2.—Systolic and diastolic pressure levels before and after operation.

ANALYSIS OF POSTOPERATIVE DEATHS

Deaths Occurring in the Immediate Postoperative Period.—Six patients died in the immediate postoperative period, as follows: 1. The patient died of uremia on the 13th postoperative day. Only the left side operation was performed. The patient had 26% urea clearance, which is now known to be a definite contraindication. 2. The patient died of hemorrhage 48 hours after emergency left side adrenalectomy. He had actinomycosis and bled profusely during 21 operations done previously for this condition. Systolic pressure was over the manometer range, and diastolic pressure was 160 mm. Hg. The operation was hesitatingly performed. Death was due to blood dyscrasia described by hematologists as capillary fragility. 3. The patient died 12 hours after the second stage of the operation. Autopsy revealed softening of the cerebral cortex, marked nephrosclerosis, and cardiac hypertrophy. There was possible adrenal insufficiency, but death appeared to be due to a cerebral accident. 4. The patient died with a "jelly-like" brain 12 days after first stage. There was rapidly advancing malignant hypertension (240/140 mm. Hg) that medication failed to control. Death was due to respiratory failure. 5. The patient was a paraplegic with malignant hypertension, controlled medically by veratrum viride (Vertavis) given intravenously. This medication would bring the comatose patient to the point of almost normal lucidity. Bilateral partial adrenalectomy was performed in one stage. Death was due to uremia, and autopsy revealed glomerulonephritis. 6. The patient died on the ninth postoperative day after first stage of paralytic ileus, small retroperitoneal hematoma, nephrosclerosis, and marked arteriosclerosis. This is the only patient of the postoperative group whose death was thought to be unlikely.

Four of the six postoperative deaths occurred after the first stage. No technical error was thought to be responsible. This suggests that these four patients could not tolerate any surgical procedure, except of the most minor nature. The paraplegic patient was regarded as in an extremely desperate state, and no observer thought that he could be saved. The response to veratrum viride showed that an emergency operation was necessary to give the patient even a chance for survival.

In case 1 there was an early violation of a now known contraindication. The death in case 6 was the only surprise in this group. The small retroperitoneal hematoma was not large enough to cause fatality. It can be conjectured, however, that its presence contributed to the paralytic ileus.

Deaths Occurring After Period of Postoperative Recovery.—Four patients died after the period of postoperative recovery, as follows: 1. Death occurred four weeks after the second stage of the operation. It was necessary to perform an emergency gastric resection for bleeding duodenal ulcer after first stage. The second stage was accomplished easily. The patient showed signs of mild hypoadrenalism and encephalopathy, and autopsy revealed marked arteriosclerosis, suppurative pericarditis, cerebral softening, and nephrosclerosis. 2. Death occurred six weeks after the second stage of the operation. Hemorrhoidectomy was successfully performed for bleeding after the second stage. The patient was doing well when the physician in charge became ill. An inexperienced physician could not cope with the adrenal insufficiency that caused death. 3. Death occurred five and a half months after the second stage. The patient was an exceedingly poor risk, with marked organic changes and kidney function 40% of normal. Maintenance management was difficult, but it was accomplished. The patient was sent home, and the physician's inability to cope with the hypoadrenal state resulted in death due to adrenal insufficiency. 4. This patient was suffering from malignant hypertension. The patient did exceedingly well and was discharged one month after the second stage receiving 6.25 mg. of cortisone daily. The patient returned to his regular work. Virus pneumonia developed that caused his death in a distant hospital seven and a half months after operation. Adrenal insufficiency probably contributed to his death.

MAINTENANCE MANAGEMENT

Maintenance management is an important phase of the study, and it is directed by Dr. Knox, the cardiologist, who is presently preparing a manuscript that de-

scribes the therapy in detail. Briefly, it involves the administration of cortisone, desoxycorticosterone acetate, aqueous and lipoid adrenal extract, correction of electrolytic imbalances, and digitalis. Some apparent paradoxical phenomena are observed. For instance, cortisone therapy must be given in spite of renal involvement with hyperpotassemia, although this chain of circumstances usually contraindicates cortisone therapy in the patient who has not had adrenalectomy.

Two things are absolutely necessary for patients who are in the postoperative stage. A hospital bed must be available for the patient when the abnormal hypoadrenal stage appears, and secondly, a physician who understands the management of the hypoadrenal state must be on hand. Patients can live a long distance from the hospital, if they or their family are intelligent enough to seek the aid of the family physician. Patients and family physicians are oriented as to early signs of trouble. Several patients are handled through some of the milder episodes by the family physician. It is believed that the small remnant of left adrenal tissue serves as a measure of safety, which permits a time margin for safety not always present in the patient who has undergone total adrenalectomy.

The management of these patients is not so difficult as that of patients who have crises of Addison's disease. Certain prodromal symptoms serve as a warning. Anorexia, weakness, nausea, and vomiting in that order are usually evident when the hypoadrenal state is threatening. These patients have not shown the sudden hypotension, collapse, and coma of patients with Addison's disease. These patients do not show hypotension until the four cardinal prodromal symptoms have been present, for from 12 hours to 2 days. One difficulty in orientation revolves around the fact that the hypoadrenal novice physician wants to wait until the pressure is distinctly subnormal before elevating cortisone therapy. This causes much trouble and considerable work in addition to involving danger. The time to elevate the cortisone dosage is when the anorexia, weakness, nausea, and vomiting first appear, regardless of the level of the blood pressure readings.

All survivors have shown marked symptomatic improvement of their hypertensive symptoms. Choked disks disappear, other eye ground changes do not advance, hearts return to normal size, cerebral manifestations are bettered, but no patient has shown improvement of impaired renal function. It can be accurately stated that no survivor has shown a noticeable advancement of the hypertensive organic changes. While there has been no improvement in kidney function, our studies have not shown added kidney damage in any survivor. Some of the patients have been followed for 22 months after operation. Organic changes may again progress as time passes. Nevertheless, it is gratifying indeed to observe patients in apparent good health walking around the hospital visiting friends when, according to the natural course of their disease, many of them should have been dead for months, if not a year or more. It is also admitted that with the passage of time, hypertensive states may be resumed. Observations of this nature are a part of this investigation, and the progress of these patients will be reported when more postoperative time is gained.

The operation could hardly be expected to return these very ill patients to heavy laboring work. Four patients are doing regular work, six are doing light work, and eight have not been able to resume work of any kind, but all of these patients have had to stop work for varying periods of time before the hospitalization that precipitated the operation.

SUMMARY AND CONCLUSIONS

Experiences with bilateral partial adrenalectomy for severe hypertension are briefly discussed. There were six postoperative deaths in the immediate postoperative period. Five can readily be classified as extremely desperate cases. The sixth patient who died had been expected to survive. This operative treatment has effected normal pressure in 20 of the 21 survivors. In this one patient, although lowered pressures were experienced, the pressure was not lowered sufficiently to be classed as normal, and he is thereby regarded as a therapeutic failure. Some of the patients have been followed for as long as 20, 21, and 22 months. Symptomatic improvement of hypertensive symptoms was obtained in all survivors. Hypoadrenalism was present in all.

Bilateral partial adrenalectomy will lower blood pressures in nearly all patients (20 out of 21) to a normal level, for as long as 22 months after the operation, if a small enough piece of adrenal tissue remains. This is gained at the expense of controllable adrenal insufficiency. The balancing of these states achieves quite satisfactory results, but the maintenance management is difficult, tedious, and not without danger.

Experience with these 27 cases plausibly permits these suggestions: 1. Indications are known and can be fairly accurately estimated. 2. The preoperative and immediate postoperative care are easily and safely established. 3. Operation by the anterior abdominal approach permits accuracy, is not difficult for the operator accustomed to gastric or pancreatic surgery, is not time consuming, has not been attended with many technical errors, and appears to be safe. 4. The only phase of this investigation that denies the procedure the dignity of being routinely accepted is the maintenance management. I believe that, with the present hormonal substitutive drugs, the reasonable hope for better agents in the future, and the skill of the 1953 medical workers, the dangers can be successfully overcome.

Park Ave. and Getwell St. (15).

Duodenal Ulcer in Children.—Clinical studies suggest that many adult duodenal ulcers originate during childhood and may be cured by careful treatment. Recurrent abdominal pain in children must not be brushed off with the casual diagnosis of 'interval appendix," food allergy, constipation, or mesenteric adenitis, for it would unnecessarily delay recognition of the presence of a duodenal ulcer. . . . The most common symptom complex in children is made up of abdominal pain, nausea and vomiting, though they vary with age. In the neonatal period the findings may be climaxed by melena and perforation, with death supervening with such rapidity that diagnosis of its cause may not be recognized in time. Bleeding and pain are common at the two-year level, but beyond that age the bleeding becomes less frequent. In the older age groups, gastric upsets and abdominal pain become the most common symptoms.—F. K. Alexander, M.D., Duodenal Ulcer in Children, *Clinical Medicine*, October, 1953.

SPONDYLOLISTHESIS

ANALYSIS OF TWO HUNDRED ONE CASES

Paul C. Colonna, M.D., Philadelphia

Spondylolisthesis was previously regarded as a condition of rare occurrence. Only 125 cases were reported before 1900, and all but 6 of these were reported by obstetricians! This report deals with 201 cases observed in the Department of Orthopaedic Surgery at the University of Pennsylvania and is an index of the frequency of the condition, which represents approximately 1.25% of all the patients treated in the clinic during the past 10 years.

ANATOMIC CONSIDERATIONS

Spondylolisthesis is produced as the result of a defect between the inferior and superior articular surfaces of the neural arch. This defect is accompanied by a displacement of the vertebral column. Usually it is recognized clinically only when it is severe. The condition of spondylolysis—a separation of the neural arch without slipping—must be of common occurrence and frequently overlooked even in routine roentgenographic examinations. The commonest site of displacement is at the lumbosacral joint. The defect in the pars interarticularis of the fifth lumbar vertebra is commonest, the next in frequency being the fourth lumbar vertebra. At these two sites at least 95% of the cases of spondylolysis and spondylolisthesis occur. Undoubtedly, many of these patients, without slipping and with mild displacement, go through life with the condition unrecognized.

Many observers believe that these isthmic defects are of congenital origin and that they are produced by nonfusion of anomalous ossification centers in the neural arch. Certain facts, however, refute these assumptions.

It must be remembered that the roentgenograms of this area in newborns and infants cannot shed much light on this question because of the extensive cartilaginous structure. The opportunity for gross anatomic study in a large series of stillbirths and young infants is not great, but a study of the embryology might be expected to give some information on the development of the principal ossification centers.

Three principal centers of ossification are found in the normal development of the lumbar vertebrae. One is on each half of the neural arch; the vertebral body develops from the other. There are also five secondary centers of ossification that need not be considered in this discussion as they make up the upper and lower plates of the body, the tips of the two transverse processes, and the tip of the spinous process. The primary centers appear at about the eighth week and fuse posteriorly at term or during the first year of infancy. Failure of fusion of the primary centers gives rise to a number of congenital anomalies that have been ably pointed out by Willis.[1] The neural arch normally fuses to the vertebral body from the fourth to the sixth year.

It has been estimated by a number of observers that neural arch defects occur in between 5 and 6% of the total adult population; this is considerably higher than found in our series. If this is true, one would expect to find spondylolysis or spondylolisthesis at autopsy of infants in at least the same proportion as in the adult population, provided the congenital basis for its formation is accepted. Also, it would be logical to assume that many of the cases of this condition, if of congenital origin, might well present other well-recognized congenital lesions of the musculoskeletal system. Statistically, however, the neural arch defects in this study were not accompanied by congenital anomalies in other parts of the body.

Kilian [2] is given credit for first calling attention to this condition, but the most complete description was by Neugebauer [3] who considered its origin to be congenital. The splendid paper by Rambaud and Renault [4] in 1864 states definitely that each lateral half of the neural arch arises from two centers of ossification and that congenital lack of fusion of these centers is the primary cause of the neural arch defect. Today most anatomists and embryologists feel this thesis is incorrect. Mall,[5] in a series of 60 embryos less than one day old, found no evidence of accessory centers in the neural arch, and it is generally agreed today that the lateral half of the neural arch arises from only one center of ossification. Chandler's [6] observation in 1931 on a series of 19 embryos failed to reveal evidence of more than one ossification center for each half of the neural arch. Batts [7] reported, in 1939, from a study of 200 fetal spines that he did not find a single instance of a double ossification center for the lateral half of the neural arch at either the fourth or fifth lumbar vertebra.

Hitchcock,[8] in 1940, examined 90 fetuses and found only one center of ossification in this area. He did, however, find the original isthmic defect both with and without slipping of the vertebral bodies. He concluded that this isthmic zone is one of great potential weakness, for its consists largely of cartilage until after birth. He also found out that this area is occupied mostly by a large lake of blood vessels, almost sinusoidal in character. These data rest on his study of stillborn and infant cadavers. Interestingly enough, he could produce, by hyperflexion of the spine and a moderate degree of force, a fracture of the neural arch at the isthmic area in the

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lower lumbar region. This, it would appear, is highly important. Both bilateral fractures at the pars interarticularis area and unilateral cartilage defects could be produced. The latter was obtained with flexion, lateral bending, and torsion of the body. From this, it can be surmised that a fracture can occur at the weakest part of the neural arch during birth. Hyperextension failed to produce this finding. It would appear reasonable, therefore, to assume that the position of the infant during delivery is one factor of importance in producing spondylolysis.

Other observers, including Friberg [9] and Harris,[10] have made many important contributions to this subject. It has been shown that the isthmic defect may later go on to actual slipping of the vertebral body, with or without subsequent trauma. Why this does not occur more frequently in adult life may be due to an osseous barrier that produces some fixation. This may develop in those cases in which there are localized arthritic changes or narrowing of the intervertebral space as noted in certain adults with spondylolysis. This, however, fails to explain very satisfactorily why the signs and symptoms are usually delayed until adulthood before giving rise to disability, if one considers displacement as the primary factor in producing backache.

There are causes other than a defective neural arch that produce a displacement of the vertebra. Roche [11] recently pointed out that destructive disease of the interarticular facet area would permit some slipping forward of the entire vertebra without any defect at the isthmus. Macnab [12] calls attention to the fact that subluxation at the interarticular facets may produce in flexion a degree of actual forward displacement of the whole vertebra. He reports the clinical findings in 22 patients and does not regard Junghann's term pseudospondylolisthesis particularly satisfactory. This slipping forward usually affects the fourth lumbar vertebra and occasionally gives rise to neurological pressure symptoms in the lower extremities.

SIGNS AND SYMPTOMS

Persistent back pain accompanied by stiffness, with or without referred pain, is usually the chief complaint. This back pain may be, and frequently is, accompanied by radiating pain into the buttocks and down into either groin or both legs, but there are instances of spondylolisthesis combined with disk protrusion without any back pain, the pain being wholly confined to the extremities. In this series, there were two patients with a combined disk protrusion and spondylolisthesis. Severe neurological changes are unusual in cases of neural arch defects alone. One of the patients mentioned had both a structurally weak back and protrusion of an intervertebral disk. He became symptom-free after disk removal and spine fusion. No case of paralysis of the lower extremities was found in 201 patients, although Ryerson [13] reported such a case in a patient who recovered after spine fusion alone.

In most instances, the low back pain will disappear when the patient becomes recumbent. In a few instances in this study, however, the pain and discomfort were aggravated by this position. Long periods of standing or sitting were frequently definite aggravating factors. In a number of patients, these were dramatically relieved by spine fusion.

There was a history of definite trauma in 45 patients, but in 156 no specific injury appeared to have initiated the symptoms. Caldwell [14] cites the history of trauma in 50% of his patients, but, in my group, somewhat less than 25% of the total gave a history indicative of any specific injury. I feel that trauma in adult life is very rarely an initiating factor, but it may be an activating factor in increasing the disability. The most severely disabled patients were those who had severe spondylolisthesis in which arthritic changes in the posterior region of the vertebral body and/or an increased lumbosacral angle were combined. These patients walked awkwardly and complained not only of constant low back weakness but of a severe "bearing down" pain.

The condition occurred most frequently between 30 and 60 years of age in this series. Out of the 201 patients, 195 were over 40 years of age (table 1), a figure somewhat at variance with many reports. Analysis of the statistics in regard to male and female patients indicates slightly more males (106) than females (95), although

TABLE 1.—*Age Distribution in 106 Males and 95 Females with Spondylolisthesis or Spondylolysis*

Age, Yr.	No. of Patients
10-20	21
20-30	28
30-40	46
40-50	31
50-60	46
60-70	20
70-80	9
Total	201

Meyerding,[15] in 1940, found that 78.8% of his patients were males and 21.2% were females.

It becomes apparent that spondylolysis may be unrecognized throughout life. In the patients with spondylolisthesis, the effects can vary from a very slight disability to severe back and radiating pain and almost complete disability. In analyzing the total of 201 patients, spondylolisthesis was found seven times oftener than spondylolysis. Probably this is because patients with the latter are frequently symptom-free and the condition is unrecognized and not diagnosed unless a very careful study of the roentgenogram is made.

ROENTGENOGRAPHIC EXAMINATION

It is axiomatic to say that good bone detail is essential for accurate interpretation in patients with low back pain and who are suspected of having spondylolisthesis or spondylolysis. The anteroposterior, lateral, and oblique

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views should be taken routinely, and the 35 degree angle view of the lumbosacral joint as described by Caldwell [14] is frequently helpful, in addition to the routine 45 degree angle view. The diagnosis of spondylolysis can rarely be made without oblique roentgenograms (fig. 1), while the lateral view of the suspected area is necessary to determine the degree of vertebral body displacement (spondylolisthesis). While the defect in the neural arch usually occurs at the fourth or fifth lumbar vertebra, a unilateral or bilateral neural arch defect, with or without

Fig. 1.—Roentgenogram showing oblique view of spine. Note wide space between fourth and fifth lumbar vertebrae.

displacement, may be found at other levels. It has been helpful to try to visualize, in the oblique films, a duck's head, neck, and body when the film is held horizontally or a dog's head, neck, and body when the film is held vertically. If an area of separation can be identified between the head and body through the isthmic area, it corresponds to a lack of bony continuity in the pars interarticularis. This method may aid quick identification of the point of weakness.

The severer grades of slipping in this study all occurred at the fifth lumbar and first sacral vertebrae. Spondylolisthesis occurred at the lumbosacral area in 130 and at the fourth and fifth lumbar vertebrae in 39 patients (table 2). In two cases, there was double spondylolisthesis involving the fourth on the fifth lumbar and the fifth lumbar on the first sacral vertebra. Spondylolysis occurred at the fifth lumbar vertebra in 19 patients and at the fourth lumbar vertebra in 5.

Arthritis sometimes develops locally as shown by spurring and a narrowing of the joint space, with or without displacement. This appears to cause local back stiffness and pain. This arthritis is particularly noted on the posterior portion of the body near the intervertebral foramen. Along with these roentgenographic findings, pain in the buttock area or along the course of the lumbosacral plexus distribution frequently occurs. Another factor that appears to be important in producing the low back pain in these cases is an increased lumbosacral angle. This necessarily increases the stress and strain to the soft tissues in this area. Even with mild displacement of the vertebral body the patient may suffer extreme disability. If, therefore, there is a combination of localized arthritis and an increased angulation at the lumbosacral joint, the patient may have considerable pain even though there is very slight slipping demonstrable. The study revealed, therefore, that the degree of spondylolisthesis is not the only basis for selecting cases for initial surgery. Other conditions have also been found with pars interarticularis defects, notably back pain from a metastatic lesion involving a low lumbar vertebra.

TREATMENT

While this structural defect affects the low back to produce a mechanical instability, it is important to mention that the great majority of patients in this study were relieved without surgical fusion. Of the 201 cases, surgery was resorted to in only 29, or 14.4%. One may assume that a few of the patients were only temporarily relieved of their stiff and painful back and may have applied for surgery elsewhere. The majority, however, were indefinitely relieved by postural exercises, with or without adequate back support, and this was so recorded in their follow-up period. Very careful attention should be given the patient regarding methods for lessening the postural stress and strain on the unstable back by forms of conservative treatment.

Nonsurgical Treatment.—Nonsurgical treatment includes converting a soft mattress into a firm one, fitting the patient with a good canvas support or Knight type of back brace, instructing the patient in the use of local heat and massage, avoiding a slumping position, improving posture by exercise, and prohibiting lifting and back twisting occupations. All of these measures should be considered in advising and relieving these patients. Attention is called to the fact that in 24 patients with spondylolysis and in many with spondylolisthesis it was not necessary to surgically fuse the spine. For example, a 30-year-old man with well-marked spondylolisthesis (fig. 2) complains of only a moderate degree of

TABLE 2.—*Degree and Location of Spondylolisthesis in 177 Patients*

	No. of Patients
Degree	
1	115
2	40
3	12
4	5
Location	
L_5	130
L_4	39
L_3	5
L_2	1
L_4-L_5-S_1	2

pain. His work is not of a laboring type, and he suffers only minimum discomfort. Although he has no arthritis or increase in the lumbosacral angle at this time, he is a potential candidate for fusion of the spine.

The use of local injections in these cases of spondylolysis or spondylolisthesis is illogical. Their use should be condemned.

Efforts at reducing the displacement in patients with spondylolisthesis were to no avail. It cannot be denied that reduction can be partly accomplished in cer-

tain cases, but it requires a great deal of effort and endurance on the part of the surgeon and the patient. The reduction is difficult or impossible to maintain with conservative treatment. A temporary reduction by traction may in rare instances be obtained roentgenologically, but usually a recurrence of the slipping occurs even during the convalescing period. Satisfactory reduction is so un-

Fig. 2.—Roentgenogram showing definite spondylolisthesis.

predictable and surgical fusion of the vertebra above and below the defective one, without attempting reduction of the displacement, is so satisfactory that I have discarded any attempt to reduce the vertebral body displacement at or preceding surgery. A history of continued local pain after adequate conservative treatment should influence a decision in favor of operation.

Operative Treatment.—Various efforts have been made to operate through an anterior approach, and occasionally successful reports of this have appeared in the literature. In the present study, the posterior approach was used in all the 29 patients chosen for surgical fusion, fusing one vertebra above and one below the one affected (fig. 3). About 50%, or 14, of the patients presented only grade 1 slipping. All of these had severe low back pain for months or years and in spite of conservative treatment had not been relieved (table 3). There were 14 males and 15 females in this series, 6 of whom were 20 years of age or under, the youngest being 11 and the oldest 75.

In the majority of cases, the Hibbs type of fusion, reinforcing the bone chips with a graft from the tibia or iliac bone, was used. A review of these 29 cases is shown in table 3.

The postoperative care followed a rather routine course. There were no operative infections. Plaster immobilization was not employed in any of the fusions at the lumbosacral region but was employed for a few weeks in those cases in which fusion occurred at a higher level in the lumbar region. The patients were all measured for Knight spinal braces at the end of the sixth week but usually stayed in bed for about seven weeks after operation. They were then gradually gotten up while

TABLE 3.—*Summary of Twenty-Nine Patients with Spondylolisthesis for Which Surgical Treatment Was Given*

Site of Lesion	No. of Patients
L_3-L_4	1
L_4-L_5	9
L_5-S_1	19
Type of Procedure	
Hibbs' plus iliac bone	17
Hibbs' plus tibial bone	9
Hibbs' plus bone from bank	1
Hibbs' alone	2
Results of Operation *	
Excellent (patient symptom-free with normal activity and bony union)	20 (71.4%)
Good	5 (17.9%)
Fair	2 (7.1%)
Poor	1 (3.5%)

* One patient died from a brain tumor one month after surgery and is not included in these statistics.

wearing the brace and were allowed on their feet a few days later. They were encouraged to have short periods of activity using a walker. After 5 to 10 days in the walker, they were able to discard all support except the back brace. This they wore for a minimum of six months.

Fig. 3.—Roentgenogram showing forward displacement, lumbosacral arthritis, and increase in this joint angle, characteristic features that made operation imperative, in patient who, after many years of low back disability and occasional pain referred to the lower extremities, became symptom-free after operation. Note bony mass present posteriorly one year after fusion of fourth and fifth lumbar and first sacral vertebrae.

If at the end of that time, fusion, as demonstrated by roentgenograms in positions of flexion, extension, and lateral bending, showed bony consolidation, a lighter support was often used. In many instances, all support was discarded, and the patients gradually returned to their normal physical activity. Follow-up periods have

ranged from six months to 12 years, and as table 3 shows 20 had excellent results. By this is meant the patient was pain-free, wearing no support, and was physically active and the roentgenogram demonstrated solid bony union.

SUMMARY AND CONCLUSIONS

Two hundred one cases of spondylolisthesis or pre-spondylolisthesis (spondylolysis) are reviewed. The evidence favors the belief that the condition is initiated by trauma at birth but that the activating element producing disability can often be trauma in adult life. Conservative treatment can relieve the great majority of cases and should be given an initial trial in all patients except those with severe spondylolisthesis. Disability depends partly on the vertebral body displacement, although local arthritic changes and increase in the lumbosacral angle are contributing factors. Surgical fusion was the treatment of choice in 29 cases; the posterior approach was routinely employed. The Hibbs technique, reinforced with iliac or tibial bone grafts, was employed in all but 3 out of 29 patients. The results of surgery were excellent in 20 patients.

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HEXAMETHONIUM SALTS AS AN AID TO THE ORTHOPEDIC SURGEON

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The time has come when the whole philosophy of the use of hexamethonium compounds must be thought out and expounded. Enough experience has been gained for us to define more clearly the circumstances under which they can be used, the contraindications to their use, what results may be reasonably expected of them, and the precautions that experience teaches us must be taken in their use. If some of these tenets have been neglected in the use of these compounds, that is no good reason for their abandonment for all except major operative procedures. It is our belief that in these compounds we possess agents with a wide range of usefulness that should not be brushed aside hastily. Far too little is known of their mode of action on the various systems of the body for them to be dismissed entirely as too dangerous for clinical use. Since the clinician has far outstripped the research worker, it is to our advantage to utilize the results of clinical investigation.

This may be termed heretical thinking, but let us take an example from another field. There have been recently a mounting number of reports of fatalities due to diarrhea, almost choleric in degree, in patients receiving antibiotics, mainly a combination of penicillin and streptomycin although also after administration of others. Many patients have recovered after the administration of antibiotics has been stopped, and still others, in whom the diarrhea was due to resistant hemolytic staphylococci, have been cured by the use of chloramphenicol (Chloromycetin). These fatalities have not led to an insistent demand that antibiotics be discarded as dangerous drugs, but they have led to a plea for their wise, more cautious use. We should have the same attitude toward the hexamethonium compounds.

The use of these drugs to produce postural hypotension in patients undergoing operations where such a method, though of advantage, is not essential to surgical success should be undertaken only when the patient fulfills all the criteria of fitness usually demanded for their use. To limit their use entirely to patients undergoing major radical operative procedures that are otherwise almost impossible surgically, is to deny both the patient and the surgeon the benefits of agents that are not, in our opinion, as dangerous in skilled hands as some would have us believe.

From the Department of Anesthesiology, Hartford Hospital.
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CRITERION OF USE

The major criterion for their safe use is that the patient must have a normal blood volume. Deviations of the blood volume from normal either in the direction of polycythemia or hypovolemia with anemia must be corrected prior to any operative procedure in which the use of hexamethonium compounds is contemplated. While some of the patients in the series to be presented had an estimation of their blood volume, in others the hematocrit was accepted as an adequate guide to their status.

CONTRAINDICATIONS

Contraindications to the use of hexamethonium compounds are, with one or two important exceptions, those conditions that accompany the process of aging. Arteriosclerosis manifested in any form, by either evidence of myocardial ischemia or failing cerebral function or a history suggestive of a previous cerebrovascular accident, particularly cerebral thrombosis, forbids the use of these compounds. It must be remembered that the condition of the peripheral arteries is a poor guide to the condition of those vessels supplying vital organs. During operative procedures, a patent airway with full oxygenation and rapid replacement of blood lost is essential. The presence of shock is another contraindication to their use. Relative contraindications include poor renal function, hypotensive states, and childhood. Some patients who become mildly hypotensive after the induction of anesthesia but who continue to bleed may cease to bleed after a small dose of a hexamethonium salt, although the blood pressure may not be lowered further by such a dose.

The production and maintenance of a relatively bloodless field can contribute greatly to the ease and success of operations that are dependent on accurate anatomic visualization of the structures involved for the production of satisfactory results. It may be argued by those who oppose the use of this method under these circumstances

that these operations were performed successfully prior to the introduction of hypotensive methods. This is true, but they were frequently prolonged and accompanied by considerable blood loss with accompanying shock. It is the aim of every anesthesiologist to give each patient the best possible care. It is our belief that the proper use of these agents is to advance such an aim.

BASIS OF REPORT

This report is based on the use of hexamethonium compounds in 91 major orthopedic operations out of a total of over 200 operative procedures in which postural hypotension was successfully used and in which results were essentially the same. This series is composed of 28 operations on the hip joint and femur including 14 Judet arthroplasties, 40 spinal fusions, 1 removal of a Wilson plate from the lumbosacral spine, and 22 operations around the shoulder joint including 6 Putti-Platt procedures for stabilization of recurrent dislocations of the shoulder joint. The age of the patients included in this study varied from 5 to 74 years.

The average operative time for a Judet arthroplasty was 131 minutes, ranging from 95 to 165 minutes. The average time for the series of spinal fusions was 142 minutes, ranging from 105 to 220 minutes. The average time for the operations about the shoulder joint was 113 minutes, ranging from 90 to 135 minutes. The dose of the hexamethonium compounds that was used in these patients was progressively reduced. Early in this series, the majority of patients received 50 to 100 mg. of hexamethonium ion to produce postural hypotension; one patient received 200 mg. An increasing number of reports of tragic accidents probably due to profound, prolonged hypotension combined with evidence of extreme susceptibility of a limited group of patients led to the use of a small test dose of 3 to 5 mg. for all procedures. This was found frequently to be sufficient to produce postural hypotension. Further small doses, of a like order, were administered as required. Contrary to previous reports that stated that repeated doses were usually ineffectual, a satisfactory hypotension was maintained by this method. Many patients in the latter part of the series received a total of not more than 25 mg. It was possible by this usage to maintain the systolic blood pressure at approximately 80 mm. Hg, which we feel is a safe and satisfactory level. If hemostasis was not achieved at this level of blood pressure, the method was abandoned.

RESULTS OF STUDY

It was most difficult to improve working conditions around the hip joint because of the difficulty of elevating this area above the rest of the body with the patient in the supine position. This is reflected in the data showing the number of patients in each group requiring blood transfusions during or after the operative procedure. Of the 14 patients undergoing Judet arthroplasties, 10 received 500 cc. of whole blood, 2 received 1,000 cc. of whole blood, and 2 did not have transfusions. Of the 40 patients undergoing spinal fusion, 20 received blood transfusion of 500 cc. and 7 received 1,000 cc. of whole blood. The remainder did not require transfusion. Included among the 40 patients undergoing spinal fusion were 15 children aged 12 to 18 years. Most of them had an extensive fusion of 6 to 10 vertebrae to correct severe kyphoscoliosis. Many of these patients were in complete body casts. In these a small window was cut in the back of the cast for the performance of the operation. It was impossible, therefore, to position these patients to any marked degree. It is remarkable that a satisfactory result was obtained, in that children respond poorly to hypotensive agents because of considerable adaptability and resiliency of their cardiovascular tree. This was true in the majority of these patients. They had but a transient fall in blood pressure. Nevertheless, the operative field was considerably drier than usual as is indicated by the fact that it is the custom to do these extensive fusions in two stages, five vertebrae at each stage, with transfusion of 1,000 cc. to 1,500 cc. of whole blood each time. Of the 21 patients undergoing procedures involving the shoulder joint or upper humerus, only 6 were given transfusion with 500 cc. of whole blood.

From the point of view of the surgeon, it was possible to produce the best results in operations about the shoulder joint. We considered this to be partly due to the more favorable position for postural hypotension that can be adopted for these patients. When muscular relaxation was maintained, the results in patients undergoing spinal fusion were equally as good. It is the considered opinion of the surgeons with whom we have worked that blood loss was diminished to the extent of between 1,000 cc. and 1,500 cc. in patients undergoing spinal fusion and to a lesser extent in the other operations. It is considered that the operative time was reduced, although, when a Wilson plate was being inserted for the purpose of fixing the lumbosacral spine, the operative time was not materially diminished. It was easy to maintain anesthesia in these patients by using nonexplosive anesthetic agents. Surgeons were able to use the cautery whenever they desired.

It has been stated that patients receiving hexamethonium salts took longer than usual to awaken from anesthesia. This was not our experience. Frequently patients were awake and rational by the time they reached the recovery room. In the immediate postoperative period, they were usually quiet and complained less of postoperative pain than the average. There was some increase in nausea and vomiting during the first 24 hours after surgery, but this did not persist. Urinary output, which we watched closely, was uniformly adequate. We had no instances of oliguria or anuria after the use of these agents, and the output in the first 24 hours usually exceeded 1,000 cc. An output of 5,000 cc. on the third postoperative day was recorded for two patients in this series. No postoperative hematomas developed, and one surgeon remarked on the dryness of wounds for spinal fusion postoperatively. This absence of hematomas may have been due in part to our unwillingness to use vasopressors to elevate the blood pressure at the end of the operative period. It is our opinion that the use of vasopressors leads to formation of hematomas and can, on occasion, give one a false sense of security in cases in which blood loss has not been adequately replaced. One patient, who underwent a Judet arthroplasty and appeared to be doing well, had a moderate fall in blood

pressure five hours postoperatively. This was treated by a transfusion of 500 cc. of whole blood after which the blood pressure slowly returned to the normal level. These patients tolerate blood loss poorly, and any blood lost must be replaced. It may be pointed out that the position in which these patients in this series were placed on the operating table contributed to satisfactory production of postural hypotension at that time. In the postoperative period when they were lying prone or supine, the return of blood to the heart was facilitated and led to a rise in blood pressure. This circumstance served to make the use of this procedure proportionately safer. It is unwise to elevate the head of the bed until stabilization of blood pressure is complete. It is difficult to make any estimate of the effect that this method had on the convalescent period. These patients were all in the hospital for prolonged periods after operation, and the method of anesthesia had little influence on the length of hospitalization.

Data on Patient Before, During, and After Surgery

Time	Blood Pressure, Mm. Hg	Cardiac Output, L/Min.	Total Peripheral Resistance	Remarks
Preop, 10:45 a.m.	106/78	2.2	3120	Patient apprehensive
11:05	.....	...	....	Anesthesia induced
				Hexamethonium, 5 mg., I.V.
11:07	100/66	2.9	2210	
11:15	80/60	4.3	1280	
11:20	84/60	3.5	1560	
11:30	74/54	3.4	1420	
11:40	74/50	5.0	960	
11:45	.....	...	....	Blood transfusion started
11:50	66/54	3.8	1180	
12:00	58/42	3.7	1010	
12:10 p.m.	74/50	2.7	1680	
12:20	72/48	3.5	1300	
12:35	82/50	2.9	1760	
12:45	86/50	2.6	1970	
12:50	86/50	2.9	1760	
1:00	92/52	2.7	1300	
1:05	.....	...	....	Operation completed
Postop, 2nd day	128/80	2.4	3180	Complaining of pain
8th day	120/72	4.0	1820	

Special investigations on a few of these patients included the use of the heart sound meter for determination of cardiac output before, during, and after operation. We found that there was little change in the cardiac output after the injection of these drugs, although there was usually a profound fall in the total peripheral resistance. These findings are in agreement with those of Gilmore, Kopelman, McMichael, and Milne [1] but at variance with those of Shackman, Graber, Melrose, and Smith.[2] The data on a 19-year-old patient who underwent a Kuntschner nailing of the right femur are given in the table. Anesthesia included thiopental (Pentothal) sodium, curare, nitrous oxide through an endotracheal tube, and oxygen. The patient received 500 cc. of blood, 500 cc. of sodium chloride solution, and 200 cc. of 5% dextrose solution during the procedure.

We have been impressed with the usefulness of hexamethonium compounds in major orthopedic procedures. We have been equally impressed with their usefulness in other fields of surgery and with their property to block noxious reflexes arising in the parasympathetic system as well as in the sympathetic system. We remain convinced that one cannot be too cautious in the use of these agents and that every precaution should be taken to ensure that patients to whom they are administered are fit to receive them. To quote Sir James Learmonth, "The production of an ischemic field in the trunk by the employment of a hypotensive technique should not be routine even when both anaesthetist and surgeon are familiar with it, although it provides conditions so favourable that I for one must regularly remind myself of this." [3]

SUMMARY AND CONCLUSIONS

The place of the hexamethonium compounds in anesthesiology should now be more clearly defined. They possess a wide range of usefulness in spite of objections to their use. Current discussion of the use of antibiotics and the more serious complications of their use is cited to support this belief. The circumstances under which the hexamethonium compounds may be used and criteria for the selection of patients are indicated.

Ninety-one patients undergoing major orthopedic procedures are included in the series. The length of operation, dosage of hexamethonium ion required, and amount of blood replacement deemed necessary are discussed. The point of view of the surgeon is presented, together with a discussion of the effects on the immediate postoperative period. A special investigation of the use of these compounds is mentioned to show the absence of deleterious effects on the heart.

80 Seymour St. (15) (Dr. Steven).

1. Gilmore, H. R.; Kopelman, H.; McMichael, J., and Milne, I. G.: The Effect of Hexamethonium Bromide on the Cardiac Output and Pulmonary Circulation, Lancet **263**: 898 (Nov. 8) 1952.

2. Shackman, R.; Graber, I. G.; Melrose, D. G., and Smith, J.: Haemodynamics of Methonium Hypotension During Anaesthesia, Anaesthesia **7**: 217 (Oct.) 1952.

3. Learmonth, J.: The Surgeon and Ischaemia, Brit. M. J. **1**: 743 (April 4) 1953.

Trichinosis.—The great frequency of trichinosis in our country has long been a source of "astonishment and horror [to] many other people in many other countries." . . . Microscopic inspection of pork was deemed not suited to our high-speed processing methods, even though it has been practiced in many other countries for many years, apparently with a large measure of success. . . . A second possible method of control which could be instituted is that of low-temperature treatment of all pork. . . . The costs . . . make this method too expensive to be applied to all pork produced. A third method, that of boiling all garbage that is fed to hogs, has during 1953 been instituted in most states in the United States. . . . The method of irradiation provides direct protection to the consumer and has many advantages over other methods. It is sanitary. . . . It is simple and rapid. . . . The wholesomeness of the meat is preserved. . . . The method is relatively inexpensive. . . . The method should largely obviate the need for special processing (heating, freezing, or curing) of certain ready-to-eat pork products such as sausages and smoked ham, in order to destroy trichinae larvae. . . . The irradiation method could well become exceedingly valuable in educating the public to eat pork as an article of diet that is safe, besides being nutritious and rich in thiamine (Vitamin B_1). . . . The method would tend to eliminate trichinosis at its source, inasmuch as ingestion of scraps of irradiated trichinous pork by hogs would not transmit the infection to them, and consequently their flesh would not carry the danger of trichinosis when it was eaten by man.—S. E. Gould, M.D.; H. J. Gomberg, Ph.D., and F. H. Bethell, M.D., Prevention of Trichinosis by Gamma Irradiation of Pork as a Public Health Measure, *American Journal of Public Health*, December, 1953.

CONVULSIONS IN YOUNG INFANTS AS A RESULT OF PYRIDOXINE (VITAMIN B_6) DEFICIENCY

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During 1952 and the early part of 1953 a peculiar phenomenon occurred among infants characterized by epileptiform convulsions unassociated with any other signs of illness and devoid of either physical findings or laboratory data indicative of or suggesting an etiological factor. Unpublished reports of this condition began to come from scattered areas throughout the nation in 1952, first from Odessa, Texas, then from Arkansas and California, and finally from all parts of the country.

These infants presented a strikingly uniform picture: a normal birth history, normal growth and development, a continuous good state of general health until 8 to 16 weeks of age, when suddenly generalized convulsions occurred, usually several times a day. No apparent reason could be found. In those who were hospitalized for study, nothing significant was uncovered. In some there was a mild elevation of spinal fluid protein, and in a few, the serum phosphorus level was moderately elevated. Subdural taps never revealed any abnormalities. The electroencephalograms that were made in some cases were said to show mild unlocalized abnormalities.

All of these infants had been artificially fed, and the food they had been given was liquid SMA (consists principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron). All of the infants when fed another milk formula or given supplementary foods such as cereals, fruits, meats and vegetables were free from convulsions.

We cared for six infants with this condition within a short time. Because some of our patients and the patients of others were given anticonvulsant drugs for fear their convulsions were early manifestations of epilepsy, our case reports are presented together with a discussion of the now-known cause. We felt that other physicians who have encountered infants with this condition might derive help from this discussion in clearing up their own confusion and that of the involved parents.

REPORT OF CASES

CASE 1.—On Dec. 30, 1952, at the age of 3 months a baby girl had the first of four convulsions. She had been fed with liquid SMA since birth. Studies at the Los Angeles Childrens Hospital showed no abnormalities except that the spinal fluid protein level was 60 mg. per 100 cc. and the electroencephalogram was diffusely abnormal. The formula was changed to evaporated milk, and no more convulsions occurred. An electroencephalogram at 11 months of age showed no abnormalities, and the baby's development had been excellent.

CASE 2.—On Feb. 9, 1953, at the age of 2½ months a baby boy had a generalized convulsion followed by two others in the next two days. He had been fed with liquid SMA since birth, and even though use of SMA was continued, there were no more convulsions. Results of laboratory studies were normal, and no electroencephalogram was made. This infant is normal in every respect, and daily administration of phenobarbital was discontinued after the diagnosis was made.

CASE 3.—On Nov. 20, 1952, at the age of 2⅓ months a baby girl began having a series of generalized convulsions that lasted a month. She had been fed liquid SMA since birth, and it was given for two months after the convulsions ceased. An electroencephalogram done at time of the convulsions was interpreted as showing mild abnormalities. Results of a repeat study at 11 months were completely normal, and administration of phenobarbital was discontinued. She was an entirely healthy child at the time of writing.

CASE 4.—Born March 15, 1952, a baby girl was well for 2½ months when she had a series of generalized convulsions. Results of an examination were negative, and results of laboratory tests were all normal except for a high serum phosphorus level and a diffusely abnormal electroencephalogram. She had been fed with liquid SMA since birth. After a change in formula while being studied in the hospital, she had no further seizures and has been developing normally.

CASE 5.—Born April 9, 1952, a baby girl had her first of a series of generalized convulsions at the age of 2¼ months. She had been fed liquid SMA since birth. When an evaporated milk formula was substituted, the seizures were no longer observed and she has been entirely normal since.

CASE 6.—Born June 27, 1952, a baby boy was fed liquid SMA from birth. At the age of two months he had a generalized convulsive seizure followed by many more during the next week. A thorough hospital workup revealed nothing except a high serum phosphorus level and a diffusely abnormal electroencephalogram. Since the formula was changed from SMA to evaporated milk, there have been no seizures and the baby's progress has been quite normal.

COMMENT

Although not yet certain, there seems little doubt that a deficiency of pyridoxine (vitamin B_6) in the liquid SMA produced in parts of 1951 and 1952 by the Wyeth Company was the cause of these convulsions in 2 to 4-month-old infants who were otherwise healthy. No cases were reported among infants receiving powdered SMA, which contains an adequate amount of pyridoxine. The Wyeth Company [1] was most cooperative in our experience and did everything in its power to take the offending material off the market as soon as it was even suggested that SMA was the source of the difficulty. Two factors that may have been responsible for the deficiency of pyridoxine were a change of fats from coconut to palm oil by the company late in 1951, based on a study by Barbero and associates [2] and a different mode of sterilization in the can, which may have destroyed pyridoxine.

Pyridoxine is a vitamin about which little was known until recently. Its essential functions had been studied, of course, but deficiency states in man were not reported. Chick [3] in 1940 first reported the occurrence of convulsions in rats and pigs fed a diet lacking in pyridoxine.

From the Los Angeles Childrens Hospital.

1. Personal communication from Wyeth Laboratories.
2. Barbero, G. J., and others: Investigations on the Bacterial Flora, pH and Sugar Content in the Intestinal Tract of Infants, J. Pediat. **40**: 152, 1952.
3. Chick, H.; El Sadr, M. M., and Worden, A. N.: Occurrence of Fits of Epileptiform Nature in Rats Maintained for Long Periods on Diet Deprived of Vitamin B_6, Biochem. J. **34**: 595, 1940.

The first report of pyridoxine-deficiency convulsions in humans was by Synderman [4] in 1950. He showed that apathy, failure to gain weight, anemia, and convulsions occurred on a pyridoxine-deficient diet and that administration of pyridoxine corrected the condition.

The 1951 edition of New and Nonofficial Remedies mentioned for the first time that infant convulsions might be caused by pyridoxine deficiency.[5] Finally, the A. M. A. Council on Pharmacy and Chemistry reported in THE JOURNAL for Sept. 22, 1951,[6] the whole subject in detail and warned that convulsions in infancy could be produced by pyridoxine deficiency.

Thus the mystery of this peculiar convulsive disorder of young infants occurring during 1952 has been solved. It is our purpose in presenting these clinical case reports to acquaint physicians of the solution of this problem so that they may reopen cases in which a diagnosis of seizures of unknown etiology was made and determine if they were due to accidental pyridoxine deficiency. The pleasure and relief afforded the parents of our six cases through a simple explanation for what appeared to be an ominous condition was very gratifying.

The situation we have described is just another instance of the dangers involved in attempting to copy human milk by blind reliance on laboratory analysis. There probably are several properties of human milk we have not yet learned to discern by laboratory methods. Human milk, it may be noted, has a high level of pyridoxine.

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4. Synderman, S. E.; Carretero, R., and Holt, L. E.: Pyridoxine Deficiency in the Human Being, Fed. Proc. **9**: 371, 1950; Pyridoxine Deficiency in the Human Infant, J. Clin. Nutrition **1**: 200, 1953.

5. New and Nonofficial Remedies, Philadelphia, J. B. Lippincott Company, 1951, p. 493.

6. Pyridoxine Hydrochloride (Vitamin B_6): A Status Report, report of the Council on Pharmacy and Chemistry, J. A. M. A. **147**: 322 (Sept. 22) 1951

CONVULSIVE SEIZURES IN INFANTS WITH PYRIDOXINE-DEFICIENT DIET

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In the fall of 1951, four young infants with hyperirritability and recurrent seizures were admitted to the pediatric department of the Saint Joseph's Hospital. Extensive clinical and laboratory evaluations were made, including complete blood cell counts, urinalysis, blood urea nitrogen, electrolyte determinations, glucose tolerance test, x-ray survey, phenylpyruvic acid test, spinal tap, and electroencephalogram. All laboratory procedures on each patient were within normal limits. During their hospital stay, all of the infants clinically improved, with rapid decrease of their hyperirritability and cessation of their seizures. Without benefit of medication, all have remained free from seizure throughout the succeeding two years. The appearance of this small group of unexplained seizures prompted a review of the cases, with the revelation of one pertinent observation. From birth each infant had been fed on liquid SMA formula, which consists principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron. Furthermore, the only definitive therapeutic measure undertaken was that of changing diet of each from the liquid SMA to the hospital routine evaporated milk formula, the use of which was continued after discharge from the hospital. Since these original observations in 1951, an additional 50 cases have come to my attention and have provided the basis for this report. No cases were encountered in infants receiving SMA powder formulas.

METHODS AND MATERIAL

The infants reviewed in this study were uniform in the pattern of their problem, varying only in the degree of severity of their symptoms. Clinical observation therefore became the main tool of this investigation. The extensive laboratory work-up originally undertaken was abandoned after a number of patients had shown no appreciable changes from normal. It was felt that of the procedures available, the electroencephalogram was the most likely to provide the desired data on the status of the central nervous system. Wherever possible, electroencephalographic studies were made, with the paralydehyde method of sleep induction previously described.[1] Tracings were done under the usual conditions of normal room temperature, noise level, and reduced illumination with the patient recumbent on a sponge mattress. A standard six channel electroencephalograph was used with the sensitivity set at 7 μv per mm. Twelve electrode placements were used of the bentonite type (all reading 3,000-5,000 ohms); tracings of all areas of the brain were obtained by both scalp-to-ear and scalp-to-scalp techniques.

RESULTS

The clinical observations in these cases provided much important information. All of the infants had been fed liquid SMA from birth and had received no supplemental feedings of solid foods. Some of them had been given additional vitamins in the form of multiple vitamin preparations, none of which contained pyridoxine (vitamin B_6). Their ages ranged from 5 weeks to 4 months, with the average about 2½ months. The onset of the syndrome was usually subtle, with an apparent gastrointestinal phase of colic with abdominal distress, spitting up, and hyperirritability. Parents described the infants' activities as becoming increasingly alarming with episodes of crying out, stiffening of the body and extension of the head, staring, and periods of rolling the eyes upward. In most of the cases, these changes became progressively more severe with resultant generalized convulsive seizures of short duration. These seizures occasionally became as frequent as six to eight per day with variations of duration from a few minutes to 10 or 15 minutes. At no time was it possible to demonstrate any evidence of injury, infection, or abnormality that might have contributed to their appearance.

From the Department of Pediatrics, Saint Joseph's Hospital.

1. Coursin, D. B.: Intramuscular Paraldehyde for Artificial Sleep, Electroencephalog. & Clin. Neurophysiol. **5**: 305-308 (May) 1953.

Between seizures electroencephalographic studies were done, on repeated occasions with no clear-cut abnormality evident in any tracing. The well-known lack of established patterns of activity of the very young perhaps obscured some changes so that they were not recognizable; however, comparison of the observations in this group with known normals of the same age did not reveal any significant difference in patterns. Therapeutically, it was possible to control the syndrome either by sedation or by change in diet. Phenobarbital in doses of ⅛ grain three times a day controlled all symptoms of patients maintained on liquid SMA, but episodes would recur soon after medication was stopped, suggesting that the sedation masked a more deeply based problem.

A change of diet to evaporated milk formulas provided a ready cure for the phenomena with disappearance of symptoms. A return to liquid SMA caused exacerbations within 48 hours. It could be further demonstrated that with patients continued on liquid SMA, the addition of cereal would produce definite improvement.

It was apparent, therefore, that the liquid SMA of 1951 either contained some substance or lacked some element of nutrition to a degree that hyperirritability and convulsive seizures could be produced in some very young infants. Extensive studies failed to reveal any toxic material in the formula. Apparent correlations of the seizures with changes in water supplies induced by drought and with the fatty acid components of the formula were found to be invalid. Vitamin assays, however, showed the formula to contain less than 60 mcg. of pyridoxine per liter following the rigorous autoclaving of the formula. This manufacturing precaution against any possible contamination had, therefore, apparently destroyed much of the pyridoxamine and pyridoxal, the naturally occurring forms of pyridoxine. While no minimum daily requirements have been established for pyridoxine, this level of the vitamin, associated with its previously described effects on the nervous system, suggested that pyridoxine was probably the etiologic agent.[2] Since cases were reported from Texas, Arkansas, and Illinois, a general notice to all physicians was issued by Wyeth, Inc., describing the possible hazard of a pyridoxine deficiency in some infants. This led to the use of the vitamin intramuscularly or orally in at least nine cases of seizures, with definite clinical improvement.[3] The follow-up has of necessity been short, but these patients probably will not have exacerbations if their pyridoxine ingestion is kept above minimal requirements.

ROLE OF PYRIDOXINE

The relationship of convulsive seizures to pyridoxine deficiency has been well established in rats,[4] chicks,[5] and pigs [6]; on the other hand, studies in humans have been limited to isolated instances, such as that of Snyderman and associates.[7] They reported a case of a mentally defective child of 4 months who had been maintained on a pyridoxine deficient diet for 76 days with a resultant severe seizure episode. Addition of pyridoxine to the diet prevented recurrences. Stokes and associates [8] have also made some interesting observations on a patient with an apparent congenital metabolic defect of pyridoxine metabolism with resultant need for continued maintenance dosage of pyridoxine to prevent seizures. Therapeutically, Ernsting and Ferwerda [9] have reported some favorable results in the use of pyridoxine in the treatment of epilepsy. One of the patients in the group treated with pyridoxine has provided perhaps the most clear-cut clinical and laboratory evidence of the relationship of pyridoxine to this whole problem.

REPORT OF A CASE

The baby had been a full-term newborn infant delivered without difficulty and with no neonatal distress. Feedings had consisted of liquid SMA entirely. At 4 weeks of age, the baby was noted to be irritable and to have supposed colic pains, with tossing of his head and stiffening of his whole body. Progressive changes with staring episodes and generalized seizures were noted. The infant was admitted to the pediatric department of St. Joseph's Hospital at the age of 2½ months. The physical examination was not remarkable. Laboratory studies, including an electroencephalogram, were within normal limits. Feeding of liquid SMA was continued in the hospital with no evidence of seizures; however, it was discovered that a relief nurse had

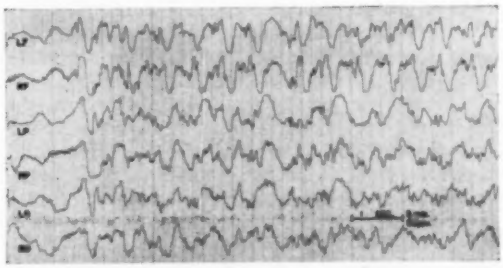

Fig. 1.—Electroencephalogram of convulsive seizure during status epilepticus, while the infant was on a liquid SMA diet. In this scale, five vertical lines equal one second and 2 mm. in amplitude equal 50 μv.

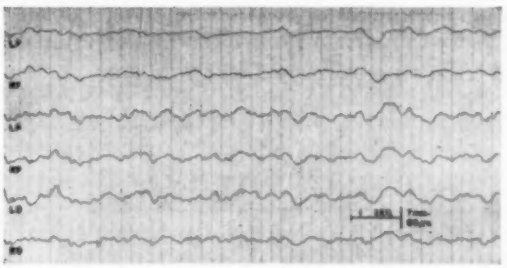

Fig. 2.—Electroencephalogram taken five minutes after injection of 100 mg. of pyridoxine intramuscularly during status epilepticus, while the infant was on a liquid SMA diet. In this scale, five vertical lines equal one second and 7 mm. in amplitude equal 50 μv.

been giving him cereal. Feedings were then limited strictly to liquid SMA with reappearance of symptoms in five days. On the fifth day, the infant became more evidently affected and went into status epilepticus. The eyes remained fixed and staring, pupils contracted with no reaction to light. The body was held rigid with the head thrown back. Generalized convulsive seizures recurred repeatedly with occasional outbursts of an abnormally high-pitched monotone cry. There was some evi-

2. Gyorgy, P.: Personal communication to the author.
3. Farrar, G. E., Jr.: Personal communication to the author. May, C. D.: Personal communication to the author.
4. Daniel, E. P.; Kline, O. L., and Tolle, C. D.: A Convulsive Syndrome in Young Rats Associated with Pyridoxine Deficiency, J. Nutrition **23**: 205-216 (March) 1942.
5. Lerkovsky, S., and Kratzer, F. H.: Pyridoxine Deficiency in Chicks, J. Nutrition **24**: 515-521 (Dec.) 1942.
6. Hughes, E. H., and Squibb, R. L.: Vitamin B_6 (Pyridoxine) in the Nutrition of the Pig, J. Animal Sc. **1**: 320-325 (Nov.) 1942.
7. Snyderman, S. E.; Carretero, R., and Holt, L. E., Jr.: Pyridoxine Deficiency in the Human Being, Fed. Proc. **9**: 371-372 (March) 1950. Snyderman, S. E.; Holt, L. E., Jr.; Carretero, R., and Jacobs, K.: Pyridoxine Deficiency in the Human Infant, J. Clin. Nutrition **1**: 200-207 (March-April) 1953.
8. Stokes, J.; Hunt, A. D., and McCrory, W. W.: Personal communication to the author.
9. Ernsting, W., and Ferwerda, T. T. P.: Treatment of Epilepsy with Pyridoxine, Nederl. tijdschr. geneesk. **95**: 3643-3647 (Dec. 8) 1951.

dence of cyanosis about the lips, and there was no response to painful stimuli. Pulse was rapid and regular at 180 per minute. Respirations were gasping at 40 per minute. The patient was placed in oxygen with some improvement of color but no effect on the seizures. He was removed to the electroencephalograph laboratory and connected by means of needle electrodes to the electroencephalograph apparatus. Continuous recording was undertaken with great technical difficulty due to the child's muscular activity. Successful tracing, however, was obtained with evidence of markedly increased voltage of 200 μv and slowing to 2-3 waves per second, which appeared in bursts with recurrently accompanying spikes and lasted 4 to 6 seconds. The bursts were interspersed with 40 μv, 20-per-second fast activity of 3 to 4 seconds' duration (fig. 1). On occasion, during prolonged rigidity, runs of high voltage 3-per-second waves lasting 20 to 30 seconds were obtained. This pattern of activity with accompanying clinical seizures was well established when 100 mg. of pyridoxine was given intramuscularly. For about one minute following injection, there was little change in the electroencephalogram; however, by three minutes, activity had definitely diminished, and by four or five minutes after injection, the electroencephalogram became a normal sleep record (fig. 2). Clinically, without added oxygen, the infant had good color, slept peacefully, and showed no evidence of tremor or rigidity. He was removed to the children's ward and within 24 hours was much improved. In 48 hours, there was little evidence of previous difficulties. A third electroencephalogram, which compared favorably with the preseizure record and did not show any evidence of abnormal pattern, was taken 36 hours after the seizure episode.

The dramatic improvement in this baby in the presence of status epilepticus was most impressive. The rapid absorption and utilization of pyridoxine has been evident from other studies; however, it is felt that this is probably one of the first actual recordings of neurological response to pyridoxine under these circumstances. The infant has been free from seizure on a continued formula of the liquid SMA with supplemental pyridoxine.

SUMMARY AND CONCLUSIONS

A review of the sequence of events in the 1951-1953 study of a syndrome of hyperirritability and convulsive seizures in young infants is presented. The evidence at hand appears to prove conclusively that these observations occurred in infants fed a liquid SMA preparation, which consists principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron and contains insufficient pyridoxine (vitamin B_6). The manufacturer has added thermostable pure pyridoxine to the new (June, 1953) liquid SMA in an attempt to solve this problem; so far no cases of the syndrome have been reported in infants fed this formula. An interesting group of 54 patients clearly demonstrated the need for pyridoxine in infant nutrition. Those who received pyridoxine with observed clinical improvement supplied valuable empirical evidence of their need for the vitamin. However, the one patient who experienced status epilepticus that was clinically and electroencephalographically demonstrable and improved after pyridoxine intramuscular injection provided the final link in the chain of evidence supporting the syndrome as being the result of a specific deficiency. The ramifications of this problem are numerous and are beyond the scope of this paper. Additional work seems indicated in order to provide a more specific determination of minimal daily requirements for pyridoxine in infancy. Furthermore, a better understanding of the role of pyridoxine in nerve cell metabolism would no doubt be of value in answering some of the questions of its significance in transamination, in the metabolism of glutamic acid, and in the process of myelinization.

37 W. Orange St.

TEACHING INTERNAL MEDICINE AT UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE

A PROGRAM FOR UNDERGRADUATES

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Recently, those concerned with medical education have been reexamining their aims and methods. The deficiency oftenest emphasized is a lack of effective coordination and integration in teaching. Suggested remedies have included relaxing departmental barriers, eliminating some departments, or combining them. Perhaps the need for change may best be brought into focus by a brief review of earlier steps that have led to present forms of medical teaching. With the rapid and imposing accumulation of data pertaining to the functions of organs and organ systems in experimental animals and in man, clinical teachers were left deficient in many of the sciences basic to medicine. This led to the establishment of the "preclinical" departments that now have jurisdiction over a certain number of hours of the student's life. During this same era, the most pressing medical problems were infectious diseases for which effective therapy was unavailable. The all-important bedside care molded the clinical teacher's attitude, and it also limited his horizon. More recently, with the striking reduction in the number of fatal or even serious infections, and with increasing interest in the problems of ageing and of social and emotional adaptation, exclusive emphasis on bedside teaching has given way to a growing interest in the ambulatory patient. The research interests of medical faculties have also changed. The "preclinical" teacher is now more inclined to observe experiments in man, and the clinician is becoming more physiologically minded. These developments call for a closer integration of the subject matter of the various departments and raise the question as to whether the departmental approach to medical education has become outmoded, arbitrary, and uneconomical.

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Our feeling at the University of Oklahoma has been that one cannot infuse a new spirit of integration into teaching by merely manipulating the curriculum. Moreover, we felt that the departmental approach should be tampered with judiciously lest an orderly presentation be replaced by a scramble of notions, and we held that much teaching was not necessarily equivalent to much learning. Accordingly, the faculty attempted to effect a major change in orientation and emphasis with a minimum change in organization, working within the time allotted by the then current curriculum and with existing funds. The new plan has been in operation for a full academic year.

It was generally appreciated that a natural function of a department of medicine was to foster integration. Special clinics in medicine were largely eliminated, and specialty teaching was aimed at stimulating the student's curiosity. Although the members of the department of medicine served as consultants in their specialties, they did not restrict their teaching to fields of special interest but, by example, emphasized that any physician must be prepared to assume the care of the patient. Lengthy and cumbersome committee meetings were avoided in putting the program into operation. Plans were formulated in brief informal meetings of interested personnel. We make no claim for originality or, at this early date, for the merits of this program.

FIRST YEAR

In the freshman year the department of medicine at the University of Oklahoma is allotted one hour per week for a total of 36 hours. During most of the first semester the course is devoted to the history of medicine. Chronology is not emphasized, and there is no attempt made to include all the major figures or developments in medicine. Rather, an effort is made to stimulate the student's interest in historical reading by emphasizing how a contribution becomes significant and by dwelling on some of the ingredients of greatness. The life and work of one great man in medicine is considered in each of 10 lectures. The lecturer is chosen without concern for his faculty affiliation, but for his inspirational qualities and his special interest in the man under discussion. The student is encouraged to see the basic values common to all lasting contributions. The remaining lectures of the first semester deal with the evaluation of evidence. This is considered basic to the effective functioning of a good practitioner, as well as an investigator, or a teacher.

The second semester of the first year is devoted to demonstrations of clinical cases. The case presented corresponds to material under study in either physiology or biological chemistry. The pathological physiology of disease and the value of astute observation and logic are stressed, rather than therapeutics. These sessions attempt to implement the emphasis on the evaluation of evidence and enable the student early in his medical career to see the application of the basic disciplines in the solution of a patient's clinical problem.

SECOND YEAR

The second year course in medicine is traditionally called physical diagnosis. We have retained the name but altered the aims. It is held that physical diagnosis should not involve only the elicitation of sights, sounds, and sensations from various parts of the body but an opportunity to appraise evidence obtained by talking with patients as well as by examining them. Ninety hours have been allotted to this course. The time is evenly divided between two semesters. The early sessions of the first semester are devoted to history taking. The purposes underlying each section of the history are discussed, and the significance of symptoms in terms of altered function is dwelt on. Later, the techniques of talking with patients are illustrated and the data obtained are evaluated before the entire class. Then the entire physical examination is demonstrated several times before focus is directed toward any single organ system. Special interest in part of the examination is suggested in each case by data in the patient's history. Finally, the techniques of examination are presented in a setting of bodily systems rather than areas of anatomy. The pathological basis for abnormal signs is discussed with the entire class, and later small groups of students practice, under supervision, the techniques of examination. Thus, the correlation of data is emphasized rather than the acquisition of a set of new facts. At all times the sequence of communication, examination, and formulation is stressed.

In the second semester of the second year all exercises are held on the wards and the emphasis is nearly equally divided between history taking and physical examination. During 5 of 15 three hour sessions the students individually review, with an instructor, a history taken at an earlier session. After an hour of discussion, each student goes to a new patient to take a new history. The remaining 10 sessions are devoted to examination of patients and correlation of historical and physical findings. Three students are assigned to examine one patient, and two groups of three meet with a single instructor for an hour's discussion of their findings. After discussion, the students and the instructor return to the patient to review the findings. A most important feature of these sessions is the attitude of the carefully selected instructors who view their assignment as an introductory course to medicine in its broadest sense, not just an exercise in physical diagnosis. To this end, approximately one-half of the patients selected for study come from services other than medicine, notably pediatrics, as well as surgery, the surgical specialties, and gynecology. Instructors from pediatrics and the other specialties make up approximately one-third of the teaching staff.

In order to further serve the broad aim of the second year, namely, teaching students to use what they have learned in earlier studies, the class is encouraged to attend weekly medical grand rounds as an elective exercise. These rounds are conducted primarily at the postgraduate level. At their conclusion the second year students are held for an additional half hour, in order to clarify points that might have been obscure or confusing. This part of the grand rounds exercise is conducted in an informal question and answer fashion by one of the senior full-time members of the medical staff.

THIRD YEAR

Ten weeks, or one-third of the total inpatient clerkship time in the third year is devoted to medicine. One group of attending physicians serve as tutors for the clinical clerks and are not held responsible for the ward

care of patients or the instruction of house officers. Groups of six students meet four times a week in two hour tutorial sessions. Three instructors alternate in conducting these tutor sessions so that students are exposed to a variety of special interest and teaching methods. To insure continuity, one of these instructors who is director of the third year course in medicine meets weekly with each group of students. The whole group of clerks assigned to medicine participate in a weekly conference devoted to the comprehensive evaluation of a patient. In this conference emotional and social factors are emphasized. The third year clinical clerks also attend the weekly medical grand rounds. Because we are emphasizing the goal of integration, it is significant that these sessions are attended by two radiologists, at least two pathologists, the professors of physiology and pharmacology, and one or two members of the faculty of biochemistry, pediatrics, or surgery. All come voluntarily.

During the present academic year, we are sharing a 12-week clerkship period on medicine with inpatient psychiatry. Medical and psychiatric patients are assigned in rotation to the same group of clerks, and special efforts are made to integrate the study of the patients in each department. The child psychiatry clerkship runs concurrently with the six week pediatric clerkship.

FOURTH YEAR

The greatest departure from traditional teaching methods was instituted June 15, 1952, when the fourth year students at the University of Oklahoma began their outpatient clerkships in all clinical departments on a "longitudinal" rather than a "block" system. Each student is assigned to the various clinics on different days of the week throughout the entire year. The student serves one, two, or more sessions each week in each clinic, depending on the curricular hours allotted to each department. He no longer spends a solid block of time serving in one department after another. Apart from the advantages of long-term observation in the care of patients and the opportunity to correlate experiences gained in the various specialties, this longitudinal system enables the faculty in each department to observe and appraise the growth of the students throughout the year, so that grading is more equitable and recommendations for internships can be more concrete, reliable, and up-to-date.

The assignment of patients to the clinics is made on an appointment basis and all new patients are first seen in the medical clinic. In medicine, each student is assigned one new patient per clinic session. An instructor supervises four students. When a patient requires referral to another clinic, arrangements are made, if possible, to plan the visit on a day when the original student can continue in charge of the patient. At the end of one year it was found that in approximately 75% of instances a single student was able to follow his patient from clinic to clinic and week after week in the same clinic. This year each student is following 90% of his patients throughout their period in the clinic. There has been a sharp reduction in the number of interclinic referrals, which might otherwise prove wasteful of the patient's and physician's time and energy.

In the medical outpatient department special emphasis has been placed on an understanding of the patient's adaptation to his family and his community. This phase of the teaching has been guided by a physician in the department of medicine who also holds an appointment in psychiatry. The arrangement allows the student, under competent supervision, to handle cases similar to those he will be expected to manage in his future practice. He also gains experience in selecting those who require expert psychiatric help and in preparing them for referral to a psychiatrist. Then the appointment for psychiatry, or any other clinic, is made on a day when the student will be there so he can continue to follow his own patient. Each Saturday morning, for two and one-half hours, a "clinic grand rounds" is held by the full-time professional director of the medical outpatient department. He meets with one-fourth of the members of the fourth-year class to discuss informally and in detail problems of the week's practice in the medical clinic. During the current year an additional weekly bedside conference is being added to follow patients admitted to the hospital from the medical outpatient clinic.

The arrangement of the curriculum and the assignment of students has permitted the development of a comprehensive care program in which patients from selected counties are followed after they return home to the care of their referring physicians. This project has been described in another publication.[1] It has included emphasis on the sociologic and psychological factors in health and disease and complements the work in the university clinics. We have learned from this experience that the outpatient department provides opportunities for the richest sort of teaching. The material, however, is often difficult to present effectively. Consequently, the ablest and most experienced teachers have been assigned to outpatient department duties, rather than reserving this service for junior staff members who are attempting to qualify for inpatient attending status. It is of interest that in the new atmosphere of the outpatient department the older men have participated with enthusiasm.

During the present academic year a special effort is being made to inject into outpatient department teaching an attitude of preventive medicine. During the period of preceptorship, which has been in effect for four years, the students have an opportunity to spend three days working in a county health department. This experience is designed to enhance students' feelings of community responsibility as physicians, to acquaint them with colleagues in public health and with the public health facilities, and to encourage an understanding of the importance of the home environment. As a corollary, it is expected that the program will promote better understanding and cooperation between public health officials and the future practitioners of the state. In addition, the fourth year students will undertake supervised home visits to their patients living in the Oklahoma City area. Experience with these newer modifications of our plan will be reported after data have accumulated.

1. Colmore, J. P.: University of Oklahoma Program Instructs Medical Students in Care of Long-Term Patients, Chron. Ill. News Letter 4:2 (May) 1953.

SUMMARY AND CONCLUSIONS

The experience of the past year in teaching internal medicine to the undergraduates at the University of Oklahoma is reviewed. There have been certain changes in emphasis and arrangement in the first three years. The major curricular change has been in the fourth year, where a "longitudinal" curriculum for the senior student's outpatient clerkships has replaced the old "block" system. The student serves for a part of each week in all of the major clinics throughout the year. Apart from the obvious advantages that the system offers in long-term care, it has synchronized the student's growth in all of the disciplines of clinical medicine. In the department of medicine it permitted the introduction of a comprehensive care program that effected a close working association between the university clinic and the patients' referring physicians. While it has been necessary to make certain curricular changes, the most important ingredient of the program at the University of Oklahoma is considered to be the broad attitudes of the teachers and the emotional climate of friendly cooperation and interest in the growth of the student rather than the competitive superiority of any single department.

800 N. E. 13th St. (4) (Dr. Wolf).

CLINICAL NOTES

PYLORIC STENOSIS IN TWO POUND TWELVE OUNCE INFANT

Paul Sullivan, M.D.
Richard Chambers, M.D.
and
Harry Lawler, M.D., Billings, Mont.

To report an isolated case of infantile pyloric stenosis, treated by pyloromyotomy, there should be a good reason. We report here because, in the available literature, we have been unable to find a report of a smaller infant so treated. Gross [1] mentions an infant weighing 3 lb. and 3 oz. (1,445.8 gm.) on whom a similar operation was performed. Our patient was 8 oz. (226.8 gm.) lighter. He survived not only that operation but also a subsequent wound dehiscence, intestinal evisceration, and secondary closure. He now weighs over 7 lb. (3,175.1 gm.) and shows every indication of normal growth.

CASE REPORT

A male infant was delivered prematurely at the Northern Pacific Hospital, Glendive, Mont., March 10, 1953, weighing 2 lb. 7 oz. (1,105.6 gm.). He was born spontaneously 29 weeks after the mother's last menstrual period and after three episodes of bleeding due to a partial placenta previa. His immediate neonatal course was poor. His color was a pasty grey and his respirations very irregular. He was transferred immediately to an incubator with oxygen, and pharyngeal secretions were aspirated repeatedly. After 31 hours 5% dextrose feedings were begun subcutaneously, and 24 hours later gavage feedings of SMA (consisting principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron) and skim lactic acid milk were begun.

Supplemental vitamins were given and on several occasions penicillin and streptomycin. Plasma or whole blood was given intravenously each week. His weight dropped to 2 lb. 4 oz. (1,020.6 gm.) then climbed steadily to 3 lb. 2 oz. (1,417.5 gm.) on his 41st day of life, at which time he began to vomit a little. The vomiting became more frequent and more forceful, until it seemed as though he was retaining none of his feedings. On his 46th day serial roentgenograms of his stomach, following a barium feeding, showed almost complete gastric retention. A tentative diagnosis of pyloric stenosis was made. Atropine was administered orally without success.

At 47 days of age he was transported by train, in an incubator with oxygen, to St. Vincent's Hospital, Billings, Mont. His weight was 2 lb. 12 oz. (1,247.4 gm.). He was dehydrated, respirations were interrupted by periods of apnea, and he appeared weak. A pyloric tumor was felt. On feeding, visible gastric peristaltic waves reversed themselves, causing a projectile vomitus; this contained barium given 24 hours before. The hemoglobin level (photoelectric colorimeter) was 8.6 gm. per 100 cc., and a transfusion was given. Preparation for surgery included dextrose in ½ N saline solution given subcutaneously, vitamins C and K, and antibiotics; the operation was performed the same day. At surgery, with the patient under 0.1% procaine hydrochloride (Novocaine) local infiltration anesthesia, a right subcostal muscle splitting incision was made, a typical pyloric tumor discovered, and Ramstedt pyloromyotomy performed. Oxygen was given continuously before, during, and after surgery. Postoperatively, the patient was given blood, glucose administered parenterally, antibiotics, and vitamin C. Glucose water feedings were retained when first given eight hours after surgery, and later diluted half-skimmed milk formulas were given. The patient gained little weight the first week.

On the eighth day the skin sutures were removed; the wound appeared well healed. The next morning (some drainage having been noticed on the dressing during the night) the wound was inspected and a small separation of skin noticed. He was taken to surgery to close this, and, while being strapped to the table, he cried, strained, and eviscerated. He was quickly prepared, the bowel reduced, and through-and-through sutures of no. 24 cotton were placed to close the wound. After surgery he was given chlortetracycline (Aureomycin) intravenously, fluids parenterally, and oxygen. After 24 hours, feedings of glucose water were resumed; in two days he was taking a full formula and began to gain weight. The sutures were removed after 16 days. He left the hospital on June 10, weighing 5 lb. 8 oz. (2,494.8 gm.) in good condition and with a well-healed wound. No vomiting was observed at any time after the initial surgery.

SUMMARY

A case is reported of infantile pyloric stenosis in a 2 lb. 12 oz. (1,247.4 gm.) infant, successfully treated by pyloromyotomy, with survival despite wound dehiscence, intestinal evisceration, and secondary closure.

404-5 Medical Arts Bldg. (Dr. Sullivan).

1. Gross, R. E.: The Surgery of Infancy and Childhood, Philadelphia, W. B. Saunders Company, 1953.

Diabetes and Pregnancy.—It has been said, with but slight exaggeration, that the problem of diabetes in pregnancy was created by the introduction of insulin; for in the preinsulin era of medicine only about two per cent of the diabetic women survived the rigors of the disease or overcame the known associated infertility. Those who did become pregnant usually ran a catastrophic course. Early abortion occurred frequently. An estimated 25 per cent died during pregnancy or the puerperium, and another 25 per cent died within two years, usually in diabetic coma.—J. M. Whitely, M.D., T. W. Adams, M.D., and M. H. Parrott, M.D., Diabetes and Pregnancy, *Western Journal of Surgery, Obstetrics and Gynecology*, August, 1953.

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MIGRATION FOR RELIEF FROM ALLERGIES

According to Criep [1] it becomes necessary occasionally to advise a patient with asthma to move to a dry, warm climate at a high altitude. "This type of change," he said, "is particularly of value in chronic intractable asthmatic bronchitis associated with bronchiectasis and infection of the paranasal sinuses." Although the author's statement is true and similar statements have appeared in other books and articles, overenthusiastic and thoughtless application of this principle often does great harm. As pointed out by Metzger [2]: "The mirage of climate as a curative agent for disease has long been pursued both by physicians and by the public." The results are often disappointing. Such psychogenic factors favoring improvement of the patient's condition as faith and new hope may be offset by worry over the expense involved and uprooting from familiar surroundings. Although some migrant patients are improved they are few compared with those who are either not improved or made worse. Careful analysis of the case records of those who are apparently cured by migration reveals that the real cause of the cure in many patients was the concurrent application of some recognized measure such as removal from pets, which could have been accomplished at home.

Metzger says further: "The physician . . . who glibly advises change to a fancied climatic utopia is spared the problems his injudicious counsel frequently creates for his colleagues and the communities of the state or region for which he unwittingly makes fallacious claims. Nor is he confronted with the stark human tragedy that often follows in the wake of ill advised change. Not infrequently whole families, greatly to their disadvantage, are torn from their financial and social roots in the interest of the individual sufferer." An example of the human tragedy referred to was observed by an Arizona physician.[3] A 10-year-old boy in a city in Michigan had a severe flare-up of his asthma. A local physician, possibly at his wit's end, suggested that the boy would have a better chance for life in Arizona. Impulsively his father gave up his job, bought a secondhand school bus, and moved his family of six to Phoenix, where they arrived shortly before Christmas without money or prospects. Granting that the father acted hastily and unwisely, he was surely poorly advised, and one cannot help wondering what would have happened if the local physician had said that the only chance of saving the boy's life would be for him to move to Tahiti, which is said to be the garden spot of the world.

The fact remains that every year more migrants arrive in certain areas of Arizona, New Mexico, and various seaboard states than the local communities can support or provide work for. If a person contemplates moving for reasons of health, it is essential that it be determined first whether the new climate will indeed effect an improvement and also whether he can live in the new community without being a ward of a local charity. Finally, a greater effort should be made in every case positively to identify the causative allergen and to find a suitable treatment that could be applied without a change of residence. It is especially important for the physician to recognize which patients will not benefit from a change of climate.

1. Criep, L. H.: Essentials of Allergy, Philadelphia, J. B. Lippincott Company, 1945, p. 195.
2. Metzger, F. C.: The Climatic Treatment of Hay Fever and Asthma, with Special Reference to Florida, J. A. M. A. **112**: 29-32 (Jan. 7) 1939.
3. Antos, R. J.: Personal communication.

NOISE

Since the advent of power-driven machinery, man has been beset with the effects of unwanted sound.[1] There appears, however, to be a popular misconception regarding the extent of the harmful effects of noise. It is necessary first of all to distinguish between acute exposure (sharp, sudden noises) and chronic exposure (continuous or regularly intermittent noises). The undesirable effects of noise may be classified as (1) effects on efficiency, (2) effects on auditory acuity, and (3) effects on communication. Many studies have been conducted to determine these effects, often with conflicting results. A simplified method of interpreting the results of field surveys, in terms that can be understood by the management in industries and by the public, is needed. Meyer [2] refers to a nomogram devised by Beranek that should aid in solving this phase of the problem, and in describing the technique of noise surveys he indicates that failure to consider such factors as temperature, relative humidity, and prevailing winds has greatly decreased the value of many reported surveys. The most commonly used unit for measuring sound is the decibel, and the range of human hearing is up to roughly 130 db.

Field studies to determine the effect of noise on human efficiency have to a large extent been inadequately controlled, in that such conditions as lighting, ventilation, and increased efficiency with training and experience have not been considered. For this reason laboratory experiments have been carried out. Kryter [1] reviewed

1. Kryter, K. D.: The Effects of Noise on Man, J. Speech & Hearing Disorders, monograph supp. 1 (Sept.) 1950.
2. Meyer, A. F., Jr.; Peterson, R. L., and Bell, H. E.: Noise as a Factor in Health, Am. J. Pub. Health **43**: 978-988 (Aug.) 1953.

the reports of several such studies and concluded that in general noise has an adverse initial effect of slight magnitude, which through adaptation rapidly wears off whether the task be chiefly mental or muscular. In some studies after prolonged exposure to noise, cessation of noise resulted in another brief period of slightly decreased efficiency. Discontinuous loud mechanical noise and soft music were both found to be more distracting than continuous loud noise. Some sounds rated as most annoying were not also rated as most distracting. It was further concluded that man can maintain the same level of performance in a noisy as in a quiet environment for many types of activity. The noise generated by an airplane motor, for example, had little or no effect on motor coordination, reaction time, perception, or mental functions even after seven hours of exposure, despite the subjects' preference for quiet surroundings and the development of subjective fatigue and irritability.

In a small group of persons, exposure to noise for several hours may cause vague uneasiness, headache, otalgia, tremors, nausea, vertigo, tenseness, or insomnia. This reaction is observed most frequently in neurotic persons, may be affected by personal motivation, and does not necessarily depend on the loudness of the noise.[3] On the other hand, exposure to noises of extreme intensity (over 120 db.) causes heating of the skin, blurring of vision due probably to vibrations of the cranial bones if the frequency is between 700 and 1,500 cps, apparent muscular weakness, and loss of hearing. All of these effects are reversible. A loud unexpected noise may cause a rise in blood pressure and a decrease in gastric peristalsis and gastric secretion. These manifestations are a part of the startle reaction.

The factors that influence the effects of noise on man include (1) the fact that noise is sound of an unwanted character, (2) extremes of pitch or frequency, (3) extreme loudness, (4) unexpectedness, (5) uncertainty of the direction from which it comes, (6) unfamiliarity or inability to identify its cause, and (7) the state of health of the person exposed.[4]

Although either temporary or permanent deafness may result from exposure to noise it is not clear just what intensity is required to damage the auditory nerve. Hearing losses reported in some industrial workers are probably exaggerated because of inadequate testing conditions and lack of accurate measurement of hearing before exposure or of proper evaluation of recovery. It is difficult in older workers to say how much of their loss of hearing is due to noise and how much to age. Recuperation following removal from exposure varies with the individual, and maximal recovery may require two or more months. There is good evidence, however, that no permanent damage results from prolonged exposures to intensities of about 85 db. Brief exposures lasting up to one hour may cause some hearing loss if the intensity is 100 db., regardless of the frequency. Pain will follow exposures to 140 db., and rupture of the eardrum occurs at levels of 160 db. or more.

When there is chronic exposure, the greater the intensity of the sound the greater the resultant hearing loss, and the loss is greatest for the dominant frequency in the damaging noise and for the frequencies above that level. In persons who become deaf after exposure to a severe blast that ruptures the eardrum, the deafness is usually due to otitis media and not directly to the blast.

Noise may have a masking effect on speech and other sounds, and this may be dangerous for the factory worker, as it is likely to make auditory warning signals inaudible. In general, noise will have little effect on the intelligibility of speech if the average intensity of the speech is 18 db. more intense than the background noise throughout the frequency range 200 to 7,000 cps. It has been shown that conversation may be carried on between two persons at a distance of 6 ft. in the presence of a background noise of 85 db. by raising the voice but without undue strain or discomfort.[3]

The problem of noise control has been approached from many angles. There are laws dealing with nuisance, and from the legal standpoint noise is a nuisance if it is excessive, unreasonable, unnecessary, or injurious to health and capable of being mitigated.[4] Most leases have clauses concerning noises especially after 11:00 p. m. Persons employed in factories where noise cannot be eliminated are advised to wear ear plugs. Dry cotton ear plugs are practically valueless, but wax-impregnated cotton is effective, not uncomfortable to wear, and can be replaced daily, thereby eliminating the objection to rigid plugs that they are hard to keep clean. Even so, few workers like to wear ear plugs. One interesting observation was that in the presence of certain intensities the wearing of ear plugs may improve the reception of speech.[1] To be fully effective, plugs must reduce intensity levels to less than 85 db. They are effective in sound fields up to 120 db. and are definitely inadequate in fields of 140 db. In industries where employees are constantly subjected to loud noises serial audiograms should be obtained at regular intervals and a system of rotation to work in quieter surroundings should be in force to permit natural recuperation.

Practical industrial noise control involves the cooperation of management, engineering, safety, and medical personnel. Much can be done to damp out the vibrations of heavy machines and thereby reduce their noise, but the best place to attack this phase of the problem is in the original designing of the machines.

It may be concluded that most normal persons have a wide adaptability to noise and that once adaptation to a given noise level is achieved, energy is not expended by those working in such an environment at a rate sig-

3. Barron, C. I., and Poole, F. E.: Industrial Noise: Its Effect and Control, Am. J. Pub. Health **42**: 705-710 (June) 1952.

4. Davies, F. G.: Noise and the Public Health, J. Roy. San. Inst. **73**: 46-53 (Jan.) 1953.

nificantly greater than normal. There are many reports claiming that noise adversely affects public health, but the possible relationship between noise and health needs further study. In view of the problems related to modern industry such study is in order now.

THE ANTISTREPTOLYSIN TITER

The antistreptolysin O titer is used to provide evidence of the recent occurrence of a streptococcic infection. A rise in titer of this antibody is first detectable one to two weeks after onset of the infection, and the maximum titer is attained at about four weeks. Thereafter, the titer declines gradually at a rate that is variable but much slower than the rate of the initial increase. Because of the almost universal exposure to streptococcic infections, measurable quantities of antistreptolysin are found in a high proportion of older children and adults. Consequently, in using the test for diagnostic purposes, the demonstration of an increase in titer in successive serum samples or the occurrence of a very high titer is of more significance than a slightly elevated titer (100-200 units) in a single serum specimen.

The test has its most important application in the differential diagnosis of rheumatic fever. When the symptoms and signs are atypical or inconclusive, proof of the recent occurrence of a streptococcic infection affords supporting evidence for the diagnosis. The absence of an antistreptolysin response does not eliminate the diagnosis, however, since only 85 to 90% of patients with acute rheumatic fever show significant increases in this single antibody.

VOLUNTARY RETIREMENT PLANS FOR PHYSICIANS

Elsewhere in this issue (page 417) is a series of questions and answers on the features of the Jenkins (Reed)-Keogh bills, which are intended to establish a voluntary individual retirement system. Also explained are differences between these bills and Old Age and Survivors Insurance. At the St. Louis Clinical Meeting in December, the House of Delegates reaffirmed its support of these bills (H. R. 10 and H. R. 11 of the 83rd Congress) and restated its objections to physicians being placed by compulsion under the tax and benefit provisions of the Old Age and Survivors Insurance (OASI) sections of the Social Security Act. These identical bipartisan bills would give the 11 million self-employed and the 30 million pensionless employed the counterpart of the tax deferment now enjoyed by the 20 million employed covered by tax-exempt pension plans approved under section 165 (a) of the Internal Revenue Code. H. R. 10 and H. R. 11 would make no change in the Social Security Act but would provide a way for those who desire to prepay their own pensions.

RAPID DIAGNOSIS OF ADDICTION TO MORPHINE

Nalorphine (Nalline) precipitates symptoms of abstinence in persons addicted to morphine, methadone, and all related compounds and thus can be used as a means for rapidly diagnosing addiction to these drugs. Nalorphine will not precipitate symptoms of abstinence from meperidine (Demerol) unless the addict is taking 2,000 mg. or more daily. The use of nalorphine in diagnosing addiction to morphine and methadone is not an innocuous procedure, since too large a dose of nalorphine will produce symptoms severe enough to endanger the lives of persons strongly addicted to these drugs. The procedure is contraindicated in addicts suffering from any serious organic disease. It should never be carried out without full explanation to the patient, and written consent should always be obtained. Since a positive diagnosis of addiction may have serious legal implications, another physician should always be on hand to act as a witness.

The technique developed at the Addiction Research Center, U. S. Public Health Service Hospital, Lexington, Ky., is as follows. The suspected addict is examined to determine whether any serious organic disease is present. The procedure is explained to the patient, and his consent is obtained in writing. The patient is carefully examined by two physicians to determine whether symptoms of abstinence (such as yawning, lacrimation, pupillary dilatation, and "gooseflesh") are present. If they are not, 3 mg. of nalorphine is injected subcutaneously. If the patient has been taking as much as 120 mg. of either morphine or methadone daily for 15 days or more, definite abstinence symptoms, including profuse perspiration, pupillary dilatation, hyperpnea, "gooseflesh," nausea, vomiting, and defecation, will appear within 20 minutes. If these symptoms are not seen at the end of this period of time, an additional 5 mg. of nalorphine is injected, and the patient is observed for an additional 20 minutes. If abstinence symptoms have not occurred, a third dose of 8 mg. is injected. If definite abstinence symptoms are not precipitated, and if typical effects of nalorphine are evident (pupillary constriction, pseudoptosis, slurring of speech, and reduced respiratory rate), it is safe to conclude that the patient has not been taking or receiving either morphine or methadone in sufficient dose or at sufficiently frequent intervals to create a significant degree of physical dependence. If a positive test is obtained, the patient should be given 15 to 30 mg. of either morphine or methadone. Symptoms of abstinence precipitated by nalorphine will decline gradually during the course of two or three hours. If a negative test is obtained, the patient should be kept under observation until the direct effects of the nalorphine have subsided; this will require about four hours. The procedure outlined will give positive results in patients who have been taking as little as 10 mg. of either morphine or methadone four times daily for 7 days.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

The fact has been brought to my attention repeatedly during the past few weeks that some confusion exists within the profession regarding the Joint Commission on Accreditation of Hospitals. In St. Louis, the House of Delegates adopted a resolution calling for publication of articles in THE JOURNAL and other official medical and hospital periodicals that would explain regulations, bylaws, and functions of the commission. I am privileged to help bring about such a better understanding.

The Joint Commission on Accreditation of Hospitals has assumed responsibility for the hospital standardization program previously conducted by the American College of Surgeons since 1919. Formal transfer of the responsibilities was made Dec. 6, 1952, at ACS headquarters in Chicago. From that date on, this work became a joint enterprise of the American Medical Association, Canadian Medical Association, American College of Physicians, American Hospital Association, and American College of Surgeons. Dr. Edwin L. Crosby, immediate past president of the American Hospital Association, was named director, and the commission set up its headquarters at 660 North Rush Street, Chicago 11. Additional information can be obtained from the association at that address. Dr. Crosby has assured me that he or some other representative of the Joint Commission will be happy to discuss the program of the commission with any medical group.

Twenty representatives from the five constituent organizations make up the Board of Commissioners, which is solely responsible for *all* actions on accreditation. The American Medical Association has six votes on the board. The Canadian Medical Association has one vote. The American College of Physicians and the American College of Surgeons have three votes each, and the American Hospital Association has seven votes. One of these seven votes, however, is exercised by a member representing the Canadian hospitals. Eleven members of the commission are actively engaged in the practice of medicine. Inspection of hospitals is conducted by field representatives employed by the member associations. These physicians make the survey for accreditation while carrying on their customary studies for their respective associations. For example, the A. M. A. surveyors who make the very important periodic inspections of internship and residency training programs now also make this accreditation survey. But in all instances the actual report of the survey for accreditation is sent to the Joint Commission for appraisal.

Purposes of the commission are clearly stated in the bylaws. They are:

"a. To conduct an inspection and accreditation program which will encourage physicians and hospitals of the United States and Canada voluntarily:

"(1) to apply certain basic principles of organization and administration for efficient care of the patient; (2) to promote high quality of medical and hospital care in all its aspects in order to give patients the greatest benefits that medical science has to offer; and (3) to maintain the essential diagnostic and therapeutic services in the hospital through coordinated effort of the organized medical staff and the governing board of the hospital.

"b. To establish standards for hospital operation.

"c. To recognize compliance with standards by issuance of certificates of accreditation.

"d. To assume such other responsibilities and to conduct such other activities as are compatible with the operation of a hospital accreditation program."

One of the first actions taken by the Board of Commissioners was to adopt the standards and principles in use at that time by the American College of Surgeons. Then a two-part "grandfather clause" was established. The first part permitted automatic accreditation by the Joint Commission of all hospitals that had obtained full approval of ACS for 1952. The second part provided that the standards and point rating system developed by ACS would be used initially as a basis for approval of hospitals. While the Joint Commission has the right to review these standards and make such changes as are considered necessary, it was decided to proceed slowly in adopting any major changes of policy.

Although the accreditation program is purely voluntary as far as the hospitals are concerned and no inspection is made unless requested, more than 4,000 of more than 6,000 hospitals in the U. S. and Canada are accredited or have requested accreditation. Of the 4,000, more than 80% made the grade. During 1953, a total of 1,301 hospitals were surveyed under the inspection program of the Joint Commission.

Standards for accreditation are of two types—required and contingent. Required standards are absolute prerequisites to accreditation, while the contingent standards are considered desirable but required only in accordance with the type, size, and organization of the hospital.

Most prevalent deficiencies found by the commission's field staff during the first year of operation were: (1) fire hazards; (2) need for improvement in the active supervision of clinical work done in the hospital by a well-organized medical staff that is self-governing, subject to the ultimate authority of the governing body of the hospital; (3) need for improvement in the thorough review, analysis, and evaluation of the clinical work done in the hospital on at least a monthly basis throughout the year; (4) insufficiently recorded essential clinical entries on medical records to establish diagnosis and support treatment; and (5) excessively high and unexplained rates for morbidity, cesarean sections, unjustified surgery, and infant, maternal, anesthetic, and total mortality in a hospital.

The Joint Commission on Accreditation of Hospitals is dedicated to the bringing of the best possible medical care, and improvements in such care, to hospital patients as rapidly as knowledge and experience will permit. An Associated Press reporter has aptly described the commission as "a powerful medical watchdog [that] stands guard against unnecessary operations." Of course, the work of this excellent group is more encompassing than that, but in any event its activities are directed chiefly for the benefit of the public as represented by the patients who enter hospitals for treatment. This is an unselfish purpose and one for which the medical profession can be justly proud.

EDWARD J. MCCORMICK, M.D., Toledo, Ohio.

ORGANIZATION SECTION

NINTH NATIONAL CONFERENCE ON RURAL HEALTH

Baker Hotel, Dallas, Texas

THURSDAY AFTERNOON SESSION

March 4, 1954

Ballroom

ALLEN T. STEWART, M.D., *Presiding*

12:00 REGISTRATION

2:00 OPENING SERVICE

MUSICAL DIRECTOR

MELVIN MUNN, Director of Administration, Blue Cross and Blue Shield, Dallas, Texas

INVOCATION

REVEREND KERR TAYLOR, Associate Director, First Presbyterian Church of Dallas

GREETINGS

HON. ROBERT L. THORNTON, SR., Mayor, City of Dallas

GEORGE F. LULL, M.D., Secretary-General Manager, American Medical Association, Chicago

GEORGE TURNER, M.D., President, Texas Medical Association, El Paso, Texas

J. WALTER HAMMOND, President, Texas Farm Bureau Federation, Tye, Texas

JAMES M. BENDER, Master, Texas State Grange, Fredericksburg, Texas

2:30 *"Let's Put More "U" in CommUNITY*

CARLL S. MUNDY, M.D., Acting Chairman, Council on Rural Health, American Medical Association, Toledo, Ohio

2:50 *Deep in the Heart of - - - Communities*

Presentation by:

CHARLOTTE RICKMAN BENSEN, Health Education Consultant, Medical Society of North Carolina, Raleigh

Other resource persons:

M. F. RIGBY, M.D., Rexburg, Idaho

TY TIMM, Extension Economist, Texas A. & M. College, College Station, Texas

HELEN ROBINSON, Extension Health Education Specialist, University of Arkansas, Little Rock

Discussion Leader:

J. P. SCHMIDT, Professor, Rural Sociology, University of Ohio, Columbus

3:30 DISCUSSION PERIOD

5:00 ADJOURNMENT

THURSDAY EVENING SESSION

Terrace Room

CARLL S. MUNDY, M.D., *Presiding*

7:00 DUTCH TREAT DINNER

Leonardo da Vinci

CHAUNCEY LEAKE, PH.D., Vice-President, University of Texas School of Medicine, Galveston

FRIDAY MORNING SESSION

March 5, 1954

Ballroom

N. H. GARDNER, M.D., *Presiding*

9:00 COMMUNITY SINGING

9:05 *The "U" in Nutrition*

Presentation by:

JOHN B. YOUMANS, M.D., Member, Council on Foods and Nutrition, American Medical Association, Dean, Vanderbilt University School of Medicine, Nashville, Tenn.

Other resource persons:

JULIAN PRICE, M.D., Member, Board of Trustees, American Medical Association, Florence, S. C.

EVELYN L. BLANCHARD, Home Economist, Extension Service, U. S. Department of Agriculture, Washington, D. C.

RUTH PETERMANN, Nutritionist, Oklahoma A. & M. College, Stillwater

Discussion Leader:

J. P. SCHMIDT

9:35 DISCUSSION PERIOD

12:00 RECESS

FRIDAY AFTERNOON SESSION

Ballroom

GEORGE F. BOND, M.D., *Presiding*

2:00 COMMUNITY SINGING

2:05 *Health Insurance—What, How, and Why*

Presentation by:

LAMBERT SCHULTZ, Staff Executive, Group Department, Provident Life and Accident Company, Chattanooga, Tenn.

Other resource persons:

JAMES STUART, Executive Director, Hospital Care Corporation, Cincinnati

EVERETT C. FOX, M.D., Dallas, Texas

HOWARD BROWER, Asst. Secretary, Council on Medical Service, American Medical Association, Chicago

Discussion Leader:

J. P. SCHMIDT

2:45 DISCUSSION PERIOD

5:00 ADJOURNMENT

FRIDAY EVENING SESSION

Ballroom

CARLL S. MUNDY, M.D., *Presiding*

8:00 MUSICAL PROGRAM

TEXAS AND PACIFIC CHORALIERS

MAURICE PETERMAN, Director, MRS. MARY MCELREE, President. Sponsored by the Texas & Pacific Railway Company, Dallas, Texas

8:30 *Soil, Civilization, and Our Health*

GEORGE D. SCARSETH, Director of Research, American Farm Research Association, Lafayette, Ind.

SATURDAY MORNING SESSION

March 6, 1954

Ballroom

WILLARD A. WRIGHT, M.D., *Presiding*

9:00 COMMUNITY SINGING

9:05 *Cuties, Cookies, and Community Service*
JUGS—Just Us Girls
MRS. ESTHER THORNTON, Superintendent, Washington County Community Hospital, Akron, Colo.

9:40 DISCUSSION PERIOD

9:55 *Home-Aid Hospital*
GORDON MAXAM, Representative, City of Lake Preston, Lake Preston, S. D.

10:10 DISCUSSION PERIOD

10:25 *A Doctor's Answer to a Community Need*
J. PAUL JONES, M.D., Camden, Ala.

10:40 DISCUSSION PERIOD

10:55 *A Planned Approach to Doctor Distribution*
CHESTER U. CALLAN, M.D., Chairman, Rural Health Committee, Texas Medical Association, Rotan, Texas

11:10 DISCUSSION PERIOD

11:50 *"U"*
AUBREY D. GATES, Field Director, Council on Rural Health, American Medical Association, Chicago, Ill.

12:00 ADJOURNMENT

SATURDAY LUNCHEON SESSION

Terrace Room
CARLL S. MUNDY, M.D., *Presiding*

1:00 LUNCHEON

1:40 INTRODUCTION OF SPECIAL GUESTS

1:45 GENERAL PRACTITIONER OF THE YEAR
JOSEPH I. GREENWELL, M.D., New Haven, Ky.

2:00 GREETINGS—WOMAN'S AUXILIARY
MRS. LEO SCHAEFER, President, Woman's Auxiliary, American Medical Association, Salina, Kan.

2:10 *Our Investment in Rural Health*
EDWARD J. MCCORMICK, M.D., President, American Medical Association, Toledo, Ohio

3:00 ADJOURNMENT

PREPAID PENSIONS FOR ALL—INCLUDING PHYSICIANS

Before and after the Clinical Meeting in St. Louis, Dec. 1-4, 1953, many questions were raised by physicians and others regarding the differences between the Jenkins (Reed)-Keogh Bills now before Congress and proposals to force self-employed physicians and others under the Old Age and Survivors Insurance tax and benefit provisions of the Social Security Act. At the risk of oversimplifying some complicated features, the questions and answers given below provide the general reader with the essential facts.—ED.

We all hope to live to a ripe old age.

But will we all have pensions?

Pensions are vital to our modern civilization as more and more persons are living longer. The number of persons age 65 and over in the United States has quadrupled since 1900. Not all will have pensions. But all could have considerable protection for retirement years, prepaid during earning years—prepaid security, not charity. In attempting to give protection for old age, the government has permitted inequalities in tax deferment to develop with the result that persons with the same gross income are unable to prepare for retirement in the same way.

This article will point the way to equality of opportunity for *all* to *prepay* pensions voluntarily. No longer will one person be able to have a pension prepaid by tax-free income while another has to buy his annuity with income left after paying taxes.

A. The Law As It Stands

Which Congressional acts provide for retirement income for millions of persons?

Title II of the Social Security Act of 1935 (Old Age and Survivors Insurance) and Section 165(a) of the 1942 Federal Internal Revenue Code.

Who pays for a pension under OASI?

Employees in covered employment contribute a small percentage of their earnings up to $300 a month (at present, 2%) to the OASI Trust Fund; this amount is matched by the employer. On the same earnings, covered self-employed workers contribute an amount equal to three-fourths the combined tax of the employer and employee.

Are the OASI pensions prepaid?

No; only partially. Beneficiaries *now* on the OASI rolls have prepaid (with their employers) only one twenty-fourth of the costs of the benefits they are receiving—scarcely enough to cover the administrative costs. (The source of the 1 to 24 ratio is the report of the (Curtis) Subcommittee on Social Security of the House Committee on Ways and Means.)

Who pays for a pension in plans approved under Section 165(a)?

The employer in noncontributory plans and both the employer and the employee in contributory plans.

Are these pensions prepaid?

Yes.

Who bears the burden of employer contributions to OASI and/or Section 165(a) plans?

The contributions, as a part of employers' costs, are shifted to the consumer in the form of higher prices. The consumer paying for these benefits may be one of the 11 million self-employed who do not benefit under either category or one of the 30 million pensionless employed who do not benefit from a tax-exempt pension plan.

B. Equity Under the Present Law

Who is covered by prepaid pensions?

Under Section 165(a) there are 20,000 approved pension plans covering approximately 20 million employees.

Who is denied this privilege?

By law, the 11 million self-employed; by failure of their employers to establish pension plans, 30 million pensionless employed. Thus, two thirds of the 61 million gainfully employed are pensionless. All these self-employed and many of these pensionless employed lack the employee fringe benefits that characterize our era.

C. Voluntary Pensions for Self-Employed and Pensionless Employed

What congressional bills would make the existing law more equitable?

A counterpart to Section 165(a) is the "Individual Retirement Act"—H. R. 10, 11, 2692, and 6114, 83rd Congress, the Jenkins (Reed)-Keogh-Camp-Elliot bills . . . identical bipartisan bills.

Would H. R. 10 and 11 amend the Social Security Act?

No; but it would amend the internal revenue law. Hence it should not be confused with proposed changes in the Social Security Act. Section 165(a) does not require OASI coverage for approval of a pension plan.

What do these bills provide?

Self-employed and pensionless employed persons would be permitted to set aside, tax-free, a limited portion of their earned incomes into individual retirement funds; taxes will be paid

Prepared by Frank G. Dickinson, Ph.D., Director, Bureau of Medical Economic Research, American Medical Association.

upon the withdrawal (usually as pensions) of these funds. The result would be tax deferment similar to that on employers' contributions to tax-exempt plans approved by the Bureau of Internal Revenue under Section 165(a).

What portion of earned income may be excluded from taxation?

Ten per cent of earned income (but no more than $7,500) may be excluded annually. Furthermore, a lifetime limit of $150,000 would, in effect, prevent financing a pension of more than $1,000 a month starting at age 70.

Into what fund must this tax-excluded income be paid?

Into a restricted retirement trust fund or to an insurance company as premiums for a similarly restricted retirement annuity contract.

When may the money be withdrawn?

Upon attainment of age 65, or upon permanent and total disability (or death). Withdrawals are taxable income.

How may the accumulated money be withdrawn from the restricted trust fund?

In a lump sum or in installments.

D. Who Is Supporting These Bills?

What national organizations testified in favor of these bills at the hearings before the House Ways and Means Committee on Aug. 12, 1953?

Among the larger groups were: the American Bar Association, American Dental Association, American Farm Bureau Federation, American Federation of Television and Radio Artists (A. F. of L.), American Guild of Musical Artists (A. F. of L.), American Institute of Accountants, American Medical Association, American Nurses' Association, American Osteopathic Association, American Taxpayers Association, American Veterinary Medical Association, Associated Actors and Artistes of America (A. F. of L.), Association of Stock Exchange Firms, Authors League of America, Inc., Bureau of Salesmen's National Associations, Engineers Joint Council, Investment Council Association of America, National Association of Investment Companies, National Association of Men's Apparel Clubs, Inc., National Association of Women's and Children's Apparel Salesmen, National Council of Salesmen's Organizations, Inc., National Food Brokers Association, National Funeral Directors Association of the United States, Inc., National Shoe Travelers Association, and National Society of Professional Engineers.

Do all of the above associations agree with the A. M. A. position against OASI coverage of their self-employed members?

No. But all are in complete agreement upon the need for this individual retirement act.

What other national organizations testified against the bills or for extensive amendments?

Believing in universal Social Security coverage, the American Federation of Labor opposed H. R. 10, 11, etc., as "preferential tax treatment" for groups opposing OASI; three A. F. of L. unions, however, testified in favor of these bills. The American Life Convention, Life Insurance Association of America, and National Association of Life Underwriters, while apparently supporting the general principle of the proposed legislation, proposed sweeping amendments that would change the basic purpose and scope of these bills.

E. Equity Under the Proposed Law

How would benefits compare *with tax-exempt Section 165(a) plans?*

Under these bills (H. R. 10, 11, etc.) the maximum pension would range from 16% to 32% of average annual earnings—an average pension of about $208 a month for a physician at age 70, $156 for a lawyer, $140 for a dentist—and a maximum of $1,000 a month. In contrast, benefits for tax-exempt pension plans approved under Section 165(a) of the 20 largest employers in the United States range from 34.6% to 53.2% of average annual earnings. Section 165(a) specifies no maximum pension, no maximum annual tax-free contribution. Three-fourths of the newer approved plans permit maximum pensions *above* $1,000 a month starting at age 65, not age 70.

How would contributions compare?

Although the maximum (normal) contribution under these bills could be 10% of earned income, the estimated average contribution would be 1.1% of the earned income of all the self-employed. In contrast, the *average* contribution under Section 165(a) is now 4.6% of payroll, with no maximum set by law. The 10% and other limits in these bills (H. R. 10 and 11, etc.) are too restrictive to be imposed upon employer contributions to the 20,000 approved tax-exempt plans because they would cripple these plans. A large employer needs elbow room to provide reasonable pensions for young and old, men and women, plant and office employees. Under tax-exempt pension plans some employers have actually contributed in one year as much as 200% of an employee's annual compensation—often for past-service credits.

How would time of taxation compare?

Under these bills, the money placed into the Restricted Retirement Fund or Annuity and the interest accumulated are excluded from taxable income until withdrawn as benefits. Similarly, under Section 165(a) the funds set aside by the *employer* for pension purposes (and interest accumulated) are not taxed until received by employees, usually as retirement income.

How would revenue loss compare?

The 3 billion dollars a year paid by employers into approved pension (and profit-sharing) plans is considered as business expense, not as taxable income. Estimates indicate that the self-employed under H. R. 10 and 11 would exclude about 200 million dollars a year, one fifteenth of the amount excluded by approved plans; no estimate has been made for the pensionless employed. The pensions when received will be taxable. Tax deferment is not tax avoidance.

How may older earners prepay their pensions?

A provision in these bills (called Special Rule) for those *now* age 55 and over would permit more than 10% (depending on attained age) of earned income to be set aside for retirement—a modest counterpart to the past-service credits incorporated into many tax-exempt pension plans approved under Section 165(a).

Do these bills provide the counterpart to other fringe benefits?

No. Although fringe benefits, such as pensions, free life insurance, and free health insurance premiums, amount to 18.7% of compensation of eligible employees, H. R. 10, 11, etc., are concerned *only* with the matter of obtaining tax-deferment equity on prepaid pensions for both the *self-employed* and the *pensionless employed*. Many of the pensionless employed, however, now enjoy some of these other fringe benefits that the self-employed do not have.

F. Is There Another Way to Restore Equity and Encourage Prepaid Pensions for All?

Would incorporation restore equity?

If physicians and others could incorporate, as officers and employees of their corporations they could establish, for their own benefit, pension plans to be approved under Section 165 (a). But law and custom make this easy solution impossible. Professional men must be responsible for their acts and not hide behind the mask of a corporate structure, and the business of most farmers and salesmen is usually on too small a scale to warrant their incorporation.

Could the pensionless employed force their employers to establish pension plans?

Although many pensionless employed serve a particular employer for brief periods of time, especially in the entertainment industry, with the result that the employer has no interest in establishing a pension plan, the sponsors of H. R. 10, 11, etc., hope that this bill will stimulate the growth of corporate pension plans in coming years.

Would repeal of Section 165(a) restore equity?

Repeal of Section 165(a) as a method of obtaining equity for the self-employed and the pensionless employed would be a cruel and nonprogressive step to destroy this rapidly growing

plan for old-age protection. The only reasonable solution is to provide the self-employed and pensionless employed the same tax-deferment advantages and privileges as are now enjoyed by those covered by pension plans under Section 165(a). H. R. 10 and 11, the "Individual Retirement Act," will provide the means to restore equity; prepaid financial security would then be possible for *all* Americans. A generation after this pending legislation is enacted, much of the need for nonprepaid pensions for an aging population will have been met by prepaid pensions. This is what OASI was supposed to do, but has not. Perhaps it never could. For it may be inherently impossible for a government operated program to achieve prepaid pensions for all. The wiser program may be for the government to provide the maximum encouragement for private pension plans, both individual and group.

CIVIL DEFENSE

Following is the second of a series of three articles on medical civil defense plans that have been prepared for the state of Maine. These plans are being published as samples for those states that have not as yet completed this phase of medical civil defense planning.—ED.

Plans for Special Weapons Defense. Part II: Radiological Defense Plan

I. RADIOLOGICAL DETECTION PROCEDURES

It has been deemed advisable to organize, equip, and train five "Radiological Detection Units," which can be attached to the State Mobile Reserve Battalions. The University of Maine and Bates, Bowdoin, Colby, and Ricker colleges were each asked to sponsor one Radiological Detection Unit. Since more than one of these units may be sent into the same major disaster area, it was deemed of utmost importance that these units have the same equipment and that they use the same techniques in obtaining data and that the same standards be used for interpreting the results. Therefore, Prof. Frederick B. Oleson, of the University of Maine department of physics, who took the five week course conducted by the Atomic Energy Commission in the spring of 1950 at Long Island, N. Y., was charged by the State Civil Defense and Public Safety Director and the State Deputy Director no. 3 with devising the Table of Organization and Equipment for these Radiological Detection Units and with outlining the course of instruction and training program to be carried out.

A. Table of Organization for each Radiological Detection Unit.

1. Administrative Staff:

a. Commanding officer or leader of each unit. (A professor from the Department of Physics or Radiology)

b. Deputy Commander or alternate leader. (A professor from the Department of Engineering or from the Physics or Chemistry Department)

c. Additional staff to consist of:

1'. Radiologist (medical liaison and consultant)

2'. Supply officer and an assistant supply officer. (Someone from Engineering Department or one who is familiar with maintenance and calibration of instruments)

3'. A biologist and an assistant

2. Three Monitoring Squads consisting of two men each (plus alternates)

a. High school science teachers

b. Scientifically trained personnel familiar with the instruments

B. Table of equipment.

1. Film badges. These devices are useful in the training of monitors where radioactive sources are used in field exercises with instruments. They are not as practical for war emergency as they cannot be stocked and they require specialized equipment for interpretation. Film badge service from some competent organization such as Tracerlab, Inc., of Boston is probably the best solution.

2. Pocket dosimeters. With the self-reading type, monitors can read the accumulated dosage at any time. For training purposes the 0-200 mr. range is best. Higher ranges of 0-20 r or 0-100 r would be more useful in an actual emergency. Proper charging equipment is necessary with these instruments.

3. High Level meters. Survey meters that show the rate of dosage are the instruments of choice for monitoring under war caused emergency conditions. Portable ionization chamber types include such instruments as the Juno, Cutie Pie, Radiac SU-10, Jordan model AG-500 and El-Tronics model SID-1.

4. Medium Range meters. The recently developed light weight survey meters, such as the CD V-710 or the Jordan AG-50, are likely to prove most useful.

5. Low Level survey meters. The portable Geiger Mueller CDV-700 or its equivalent.

a. The low level meter is most useful in monitoring personnel, and food and water for possible contamination with unfissioned radioactive materials.

b. This type of meter saturates in fields of less than 1 r/hr. and, therefore, is of little practical value for terrain survey purposes during the early stages after a bomb attack.

6. Atomic Weapons Handbook (Atomic Energy Commission, Publishers. Available from the U. S. Government Printing Office, Washington, D. C.).[1]

7. Maps of probable target areas with overlays. It is very desirable to have these on a uniform scale, preferably the same for all states.

8. Communications equipment. A suitable number of walkie-talkie units for the unit's monitoring teams and equipment to communicate with headquarters.

9. Protective equipment. Clothing that can be discarded if contaminated, gloves, overshoes or rubbers, dust or gas masks and first-aid supplies, and equipment for nerve or other types of war gases that might be encountered by members of the monitoring teams.

C. Duties of the Administration Staff of each of the Radiological Detection Units.

1. Development of plans and organization.

2. Direction of the headquarters staff and the monitoring teams associated with the Radiological Detection Unit.

The State Medical and Special Weapons Defense Deputy Director and his Radiological Defense Staff followed quite closely the basic principles outlined by Dr. George M. Lyon, consultant, Council on National Emergency Medical Service of the American Medical Association, when the Radiological Section of the Maine State Special Weapons Defense Plan was formulated.

Dr. Stafford L. Warren, member, Council on National Emergency Medical Service of the American Medical Association, reviewed this article before publication.

1. Other publications on this subject are: Safe Handling of Radioactive Isotopes, Handbook No. 42, National Bureau of Standards (March 30) 1949. Effects of Atomic Weapons, Bulletin 17740, Department of Defense and Atomic Energy Commission, June, 1950. Health Services and Special Weapons Defense, Bulletin 944, Federal Civil Defense Administration Publication AG-11-1 (Dec.) 1950. Armed Forces Handbook of Atomic Weapons for Medical Officers, Departments of the Army, the Navy, and the Air Force, June, 1951. Andrews, H. L.: Armed Forces Special Weapons Project, Essentials of Instrumentation, Radiological Defense Manual (Medical Aspects of Nuclear Energy) **3**: 77-86, 1949. Civil Defense Against Atomic Warfare, a Selected Reading List, List of Official Reports of Atomic Energy Commission and Other Government Agencies, Together with Significant Book and Periodical Publications, Bulletin 12358, Prepared for the National Security Resources Board by the U. S. Atomic Energy Commission (March) 1950. What Every Maine Doctor Should Know About the Medical Aspects of Atomic Weapons and Atomic Warfare, by Committee on Emergency Civilian Defense of Maine Medical Association, J. Maine M. A. **41**: 144 (May) 1950; **41**: 205 (June) 1950. What Every Maine Doctor Should Know About the Defense Against the Atomic Bomb, by Committee on Emergency Civilian Defense of Maine Medical Association, J. Maine M. A. **41**: 284 (July) 1950. State of Maine: Health Services and Special Weapons Defense (May) 1953. Lyons, G. M.: Civil Defense Planning and Organization with Special Reference to Medical and Health Services, Including Radiological Defense, and Some Aspects Of Medical Planning In Civil Defense, papers presented at Regional Meeting of The Council on National Emergency Medical Service, 1950.

3. Medical liaison.

4. Establish and maintain communication between the monitoring squads and the headquarters of the unit, as well as with local, county, and state directors.

5. Reduction, plotting, and evaluation of monitoring data. Mapping of isodose areas and keeping them on a current basis through the rapidly changing conditions of the early post disaster phases. Of special significance is the determination and dissemination of information on "stay-times" in contaminated areas important to disaster operations.

6. General supervision of personnel monitoring. While all exposure should be avoided, some must be taken on the basis of a "calculated risk." The limit for an individual has not been firmly established and varies from 25 r to 50 r, 75 r, and even 100 r per day according to the authority. For example, in Civil Defense Technical Bulletin 11-1, dated March, 1952. the statement is made that "In emergency operations . . . one should not hesitate to accept an exposure to the whole body of 25 r in a single day." On the other hand, the State of California, Office of Civil Defense, on Sept. 28, 1953, issued Bulletin #118 Revised, in which they indicated that the "maximum allowable dosage for the first 24 hours is 25 roentgens."

D. Duties of the Monitoring Squads.

1. Carry the following equipment:

a. Film badge if available for practice exercises.

b. Pocket dosimeter, for practice exercise—range 0-200 mr. During actual emergency operations the higher range would be necessary.

c. One high level meter of the ion chamber type. (Must be calibrated against proper standards at the central laboratory.)

d. One medium level instrument of the CD V-710 type. This promises to be the most convenient and lightest of the survey meters.

e. One low level instrument of the Geiger-Mueller type (CD V-700). (This instrument must also be calibrated against standards at the central laboratory.)

f. Protective clothing; rubber overshoes, coveralls, gloves, and, if a low or underwater burst, a suitable mask should be worn. Wide masking tape serves as a dust-tight seal between coveralls and gloves or overshoes. In the event of a gas attack assault type masks should be worn and first aid equipment for chemical agents should be available.

2. Procure the necessary radiation data by the proper use of the above equipment. This will enable the administrative staff to plot areas that are dangerously contaminated. Also test food and water for radioactive contamination.

E. Training and Instruction.

1. To be effective, monitors should be familiar with the various instruments needed in an actual emergency.

a. Each monitor should be familiar with "Effects of Atomic Weapons" and other manuals prepared for his training.

b. Field exercises using communication equipment and survey meters to locate radioactive sources is very helpful. Cobalt 60 serves very well for this purpose.

2. Those persons with scientific background and who are familiar with radiation detection instruments will require little formal training. Those without this scientific background of experience will need instruction and training, particularly in the use of the instruments made available for use by the monitoring teams. Both groups will profit by practice in a standardized form of communicating data by radio or telephone.

3. The Unit Leader (under the direction of and with the assistance of the radiological defense officers at the state level) is responsible for the training and instruction of all members of his Detection Unit.

F. The first Radiological Defense Team was organized at the University of Maine and was under the leadership of Professors Frederick B. Oleson and Jonathan Biscoe, Department of Physics.

G. Radiological Detection Teams have also been organized as follows:

Location of Team	*Leader of Team*
Bates College	Prof. Karl S. Woodcock
Bowdoin College	Prof. Noel C. Little
Colby College	Prof. Sherwood Brown
Ricker College	Mr. Wendall R. Grant

The State Civil Defense Agency has equipped all of these five detection teams with Geiger counters, Radiac Survey Meters, Dosimeters and Walkie-Talkie units. A two-week shop training program has already been carried out for monitoring personnel at the University of Maine, July 6-20, 1951, and a sufficient quantity of radioactive cobalt is available for training purposes on loan from the Atomic Energy Commission.

An evening course under the direction of Karl S. Woodcock was offered during the winter of 1952-1953 at Bates college for training members of the radiological detection unit. Classes were held once a week for fifteen weeks. The classes were two hours or more long and consisted of lectures, laboratory work and the solving of problems. About 20 persons completed the course successfully.

II. RADIOLOGICAL DECONTAMINATION PROCEDURES

Conservation of manpower and supply economy are both of paramount importance in Civil Defense planning at the state, county and local levels. Therefore, the State Deputy no. 3 has recommended that the same personnel and equipment be used, with suitable modifications in technique, of course, whenever decontamination of personnel or of terrain may become necessary after the use by an enemy power of either radiological, chemical or biological warfare agents against the civilian population of this nation.

This section on Radiological Decontamination Procedures has been prepared by the Assistant State Deputy (Radiological) Director no. 3, Prof. Noel C. Little and his advisors. The recommendations and directions which follow are for the guidance of the Special Weapons Decontamination Units should they be confronted with radioactive contamination of personnel or of vital terrain immediately following an attack with atomic weapons.

General Remarks. — Radiological decontamination differs from ordinary chemical decontamination. It is impossible to destroy sources of radioactivity by chemical means as you neutralize an acid. Radioactive material must be removed or shielded until it decays to a harmless level.

The presence of radioactive contamination cannot be determined by visual inspection. Tests must be made by means of a Geiger-Mueller counter or other suitable detecting instrument. Such tests must be made both before decontaminating to detect the radioactivity and also afterward to assure that the radioactive material has been removed.

Radioactive contamination usually exists on the surface of objects. The general procedure is to scrub the surface clean or to remove the surface. It probably will not be feasible to decontaminate large areas such as might be subjected to spray from an underwater burst. Little residual radiation has been found to follow high aerial bursts. In general, persons and small objects will be subjected to decontamination.

Location of Decontamination Station.—Decontamination stations should be set up as near the center of the bomb burst as the radioactive monitoring teams indicate is safe. As radioactive surveys are completed, these stations should be moved progressively nearer the center of the explosion. The aim should be to make the quarantined area small as promptly as possible.

Protection of Decontaminating Personnel.—Old clothing which may be discarded is sufficient protection for personnel engaged in decontaminating. Such personnel should wear rubbers over their shoes and rubber gloves. Those engaged in handling radioactive material should: (a) keep fingernails cut short, (b) refrain from eating or smoking when on duty, (c) before leaving decontamination center, take off rubbers, (d) wash rubber gloves before removing, (e) utilize available counting facilities to test for contamination.

Arrangement for Decontamination Center.—Charts 3 and 4 in the Biological Warfare Section, previously published in THE JOURNAL, Oct. 31, 1953, pages 862 and 863, show a mobile layout for decontamination work. At present this state plan contemplates the use only of mobile decontamination units. Decontamination areas within buildings or other fixed structures are not recommended. At the initial mobile unit testing space, those found uncontaminated leave as shown by the exit to the safe area. Those found contaminated follow the arrows to the next space where the outer clothing is removed and the hands and face are washed. Contaminated clothing is stored in metal ash cans or barrels. A second testing will indicate whether the individual goes out to the dressing room, or goes to the showers. Coming from the showers, he is tested again and may exit, or return for more decontamination to the showers. Finally, after being cleared by the tester, he goes to the dressing room for clean clothes and then exits.

Specific Procedures.—Decontamination of tools.

Metal (blade of axe or shovel, wrench, crowbar)

1. Wash thoroughly with water. Should dangerous radioactivity still persist, and instrument be an essential item, it could be—
2. Swabbed with or dipped into nitric acid or organic acids, then—
   - *a.* Dumped in water bath or rinsed thoroughly with water. Unless tools are carefully rinsed, dried, and oiled the surface will become corroded and would become subject to real contamination later and could not be removed except by grinding and polishing.
   - *b.* Wipe with rags
   - *c.* Dispose of rags
   - *d.* Test for radioactivity. If still contaminated, repeat. (If the emergency is great, there will be no time for anything more than a quick dip in water if available. Simple washing and wiping procedures will probably have to suffice for the acute phase of the emergency.)

Wooden handles

1. Wash with water. If still radioactive
2. Scrape with sandpaper. (A mechanical sander would probably be required. Avoid making dust; then
   - *a.* Wipe with damp cloth
   - *b.* Dump in water bath
   - *c.* Rewipe with rags
   - *d.* Dispose of rags
   - *e.* Test for radioactivity. If still contaminated, repeat.

Decontamination of Personnel

1. Shoes removed by attendant
2. Remove outer clothing and test individual for radioactivity
3. Hands washed by individual
4. Inner clothing removed by individual. Tested by attendant.
5. Take shower or wash self with damp rags
6. Test for radioactivity

7*a*. If not contaminated, dress in clothes found nonradioactive or in clean ones.

7*b*. If skin is contaminated, scrub affected part with tincture of green soap, sodium bisulfite, potassium permanganate, a detergent sequestering compound, or other cleanser. The scrubbing may have to continue until the skin is sensitive. Tests are made during this cleansing process.

Decontamination of Clothing

Clothing discarded at the decontamination center may be cleansed of radioactivity as follows:

- *a.* Stow in special containers (galvanized iron barrels) used only for this purpose.
- *b.* Carry to laundry or washing machines specially designated for this purpose only.
- *c.* Clothes are washed by persons who understand radioactive hazards.
- *d.* Test for radioactivity. If still contaminated, send through laundry again.

Determination of Radiation Hazard.—The measurement of radiation and the appraisal of the hazard is the duty of the radiological detection teams. In general, a dosage of 400 r received by the whole body is considered fatal to 50% of those exposed. A tenth of this dosage produces no serious injury. It is the dosage rate, however, which determines whether an area is safe or unsafe. Evaluation of the permissible rate will depend upon the nature of the explosion, analysis of the residual nuclear radiation, time factors, the type of test instruments used, and the general exigencies of the situation. Such evaluation is a technical matter which must be left to the specially trained teams.

Surface contamination tolerances likewise will be specified by the radiological detection team at the decontamination centers on the basis of attendant circumstances.

EMERGENCY EXPOSURES TO NUCLEAR RADIATION

Civil Defense authorities recognize that exposure to certain amounts of ionizing radiation will be accepted in some operational situations on a calculated risk basis along with other hazards of war. Trained medical personnel (radiological defense medical officers) will be responsible for evaluating the radiological situation in terms of human hazards and for advising the local civil defense director or his representative. The civil defense director must sufficiently appreciate the effects of radiation so that he will be able to utilize this advice in making operational decisions. Material contained in this bulletin is consistent with the thinking of the military and nonmilitary governmental and private authorities in this field.

As with any hazard, the cardinal principle must be: Avoid all unnecessary exposure. Training activities should involve no more than the maximum permissible exposure of 0.3 r (roentgens) per week; most of them can, and should be, carried out at exposures far less than this.

Most civil defense operations will be carried out under conditions of no radiation hazard. It will probably be unusual that any single task need involve large exposures. In emergency operations where appreciable amounts of radiation are present, one should not hesitate to accept an exposure to the whole body of 25 r in a single day.

Operational decisions may be guided by a consideration of the following statements. An acute dosage of 50 r to a group of persons will not appreciably affect their efficiency as a working unit. Acute dosage of 100 r will occasionally produce nausea and vomiting in some persons, but not to an extent that will render personnel ineffective as groups. Persons receiving an acute radiation exposure of 100 r or more should be relieved from duty, if possible, and a report made to the staff medical advisor within a week. It should be assumed that if working units receive acute radiation doses substantially above 100 r, they will rapidly become ineffective.

Acute dosage of approximately 150 r or greater can be expected to render personnel as a group ineffective in a few hours through a substantial incidence of nausea, vomiting, weakness, and prostration. Mortality produced by an acute dose of 150 r will be very low, and eventual recovery of physical fitness usually may be expected.

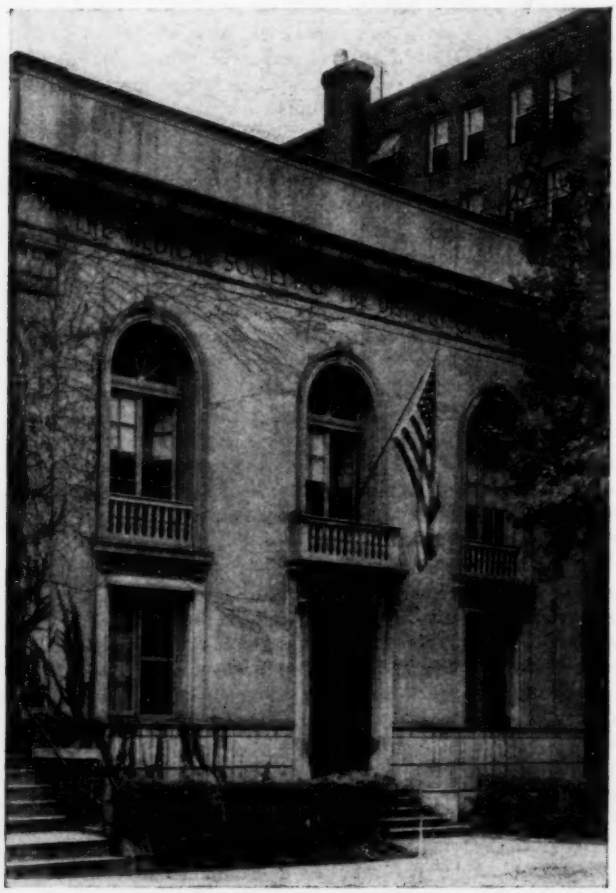
In civil defense work it may become necessary to make decisions regarding repeated exposures. The following statement from Civil Defense Technical Bulletin, TB-11-1, dated March, 1952, entitled "Emergency Exposures to Nuclear Radiation," may be used as a "rule of thumb" guide: "exposure of 25 r per day at weekly or longer intervals for a total of eight exposures (200 r) may be experienced without serious loss of efficiency due either to illness or significant general deterioration in health and ability. Before each probable reexposure, the degree of radiation damage already produced and that to be expected should be evaluated. Although not strictly true, to be on the safe side repeated daily exposures should be considered to be directly additive."

Neither the Atomic Energy Commission nor the armed forces have released any official data about exposure to thermonuclear explosions; hence it is impossible at this writing to say

anything more definite about non-lethal exposures to this type of radiation. However, interested readers can find a fairly good discussion of the theoretical possibilities of thermonuclear explosions in an article entitled "What Every Maine Doctor Should Know About the Defense Against the Atomic Bomb," published in *The Journal of the Maine Medical Association*, July, 1950, page 284. No doubt more specific information of medical interest about thermonuclear experimentation will be released in due time.

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA

On Sept. 24, 1817, there appeared in the Washington *National Intelligencer* an advertisement requesting the physicians of Washington and Georgetown "to meet at Tennison's Hotel on Friday, the 26th instant, at 11 o'clock, for the purpose



of taking into consideration the organization of a medical society." Four years earlier the first recorded assembly of Washington physicians had been called to take action on the death of Dr. Benjamin Rush, one of the signers of the Declaration of Independence. In the interim so many medical charlatans had gained a foothold that a canvass of physicians disclosed the urgent desire for organization. The 16 physicians (nearly all those practicing in Washington and Georgetown) who met at Tennison's Hotel resolved: "The physicians attending this meeting deem it important and expedient to organize at once a society in the District for the promotion of medical science." That promotion followed, but relief from the charlatans did not. Congress was therefore petitioned for a charter that would prevent any but competent physicians from entering the practice of medicine in the District. The charter having been signed by President Van Buren on Feb. 16, 1819, a hall was rented for the use of the society and a library collected by donation and purchase.

The enthusiasm that led to the formation of the group spent itself within a short time, and so during 1825 and 1826 attempts were made to form another medical society to supersede the chartered organization. From 1831 to 1833, for want of a quorum at the annual meetings, the society apparently failed to elect officers. This breach of the charter provisions was overlooked in the era of good feeling that developed in 1834 but was brought to the attention of the society later at the trial of John Williams, who had been indicted for practicing medicine in the District of Columbia without a license from the medical board of examiners of the District. The defense won, chiefly on the contention that the society, having failed to hold its charter-required annual meetings, had not elected the medical board and had, in fact, gone out of existence.

Again Congress was petitioned, and a new charter, or act of reincorporation, was approved July 7, 1838. By its charter the society was allowed to promote and disseminate medical and surgical knowledge and to maintain a board for licensing of medical practitioners in the District but was forbidden to establish a schedule of medical fees or to regulate medical practice. A separate organization, the Medical Association of the District of Columbia, was therefore formed on Jan. 18, 1833, to overcome these handicaps by establishing a fee schedule and a code of ethics. The "History of the Medical Society of the District of Columbia" states: "Although composed of much the same membership, these two organizations, the society and the association, continued down to 1911 as two parallel but independent and complementary bodies forced by Congressional restrictions to exercise different and divided functions, all of which combined are required to constitute the complete powers and activities which properly pertain to a professional medical organization." The truth of this contention is manifested in the frequent examples of duplication, in which a member held the presidency (or other office) in the two organizations simultaneously. The groups often used the same meeting place, and it was not uncommon for the association to hold its meeting immediately after adjournment of the society, membership or licensure in which was for a long time a prerequisite for membership in the association.

Thus the society, which had been formed in 1817, and the association, founded in 1833, continued their parallel courses until July 10, 1911, when the two groups were merged to form the present Medical Society of the District of Columbia. The powers and functions of both bodies were transferred into the new and enlarged organization, whose object was stated as "the promotion locally and generally of the science and art of medicine and sanitation and the interests of the medical profession." Finding it impossible to obtain an acceptable charter from Congress, the society relinquished its corporate status and continued unchartered until May 24, 1924, when it was incorporated "for the purpose of promoting and disseminating medical and surgical knowledge and for no other purpose, and not for the purpose of establishing a medical school or schools" and was empowered "to own, mortgage and convey such property as may be necessary for its purposes and to make such rules and regulations as it may require and which may not be repugnant to the constitution or laws of the United States."

During the society's centennial in 1917, a movement was begun for a home building constructed with funds furnished by physicians and interested citizens. The present headquarters building, at 1718 M St., has been occupied since 1921. The building contains an auditorium seating 500, a library, and some of the offices of the society. About 15 years later, the society purchased the adjoining apartment building at 1710 M St., where it housed its medical bureau, a supplementary secretarial telephone service. The society, which now numbers more than 1,900 members, has an administrative staff of 10. Mr. Theodore Wiprud has been the first and only executive secre-

tary since 1938. He now serves also as executive director and secretary. The telephone answering service employs 27 full-time and part-time operators. Among its other activities the society publishes the *Medical Annals of the District of Columbia,* a periodical established in 1932. The three day annual scientific assembly, which has outgrown the headquarters auditorium, is held at one of the larger Washington hotels and has an average registration of 3,000. The present officers of the society are Dr. Herbert P. Ramsey, president; Dr. Preston A. McLendon, president-elect; and Dr. Wallace M. Yater, editor.

CONFERENCE ON TRICHINOSIS

The Second National Conference on Trichinosis will open at 9 a. m., March 1, in the auditorium of the American Medical Association headquarters in Chicago, with welcoming remarks by Dr. George F. Lull, Secretary-General Manager of the American Medical Association, followed by the report of the secretary of the continuing committee, R. F. Willson, D.V.M., Detroit. L. R. Davenport, D.V.M., Illinois Department of Health, Springfield, Ill., will serve as chairman for a panel discussion entitled "Evaluation of Methods of Control of Trichinosis for the United States" which will include: "Refrigeration of Pork," Willard H. Wright, Ph.D., chief, Laboratory of Tropical Diseases, National Microbiological Institute, Bethesda, Md., and "Gamma Irradiation of Pork," H. J. Gomberg, Ph.D., Ann Arbor, Mich., and Sylvester E. Gould, M.D., Eloise, Mich.

Other presentations during the morning session include: "Meat Education Program," Mr. R. C. Pollack, general manager, National Live Stock and Meat Board, Chicago; "Review of Outbreaks of Trichinosis in the United States," James H. Steele, D.V.M., chief, Veterinary Public Health, U. S. P. H. S., Atlanta, Ga., "Observation on the World Pool of Trichinella," Norman R. Stoll, Sc.D., Rockefeller Institute of Medical Research, New York; and "Control of Trichinosis as a Public Health Measure," Herman N. Bundesen, M.D., president, Board of Health, Chicago.

The afternoon session will be devoted to study groups in public health, animal health, education, legislation, and research and organization and to a report of the study groups, which will be followed by general discussion and adoption of recommendations. A reception will be held at the Drake Hotel at 7:30 p. m. Dr. S. E. Gould, Eloise, Mich., is chairman of the continuing committee on trichinosis. Sponsoring organizations include the American Medical Association, American Dietetic Association, American Pharmaceutical Association, American Public Health Association, American Public Works Association, American Society of Clinical Pathologists, American Society of Parasitologists, American Veterinary Medical Association, Association of State and Territorial Health Officers, Conference of Public Health Veterinarians, International Association of Milk and Food Sanitarians, Michigan Memorial-Phoenix Project, University of Michigan, New York Academy of Medicine, United States Army, and the U. S. Public Health Service.

REGIONAL MEETING ON VETERANS' CARE

More regional conferences on veterans' medical care will be held during 1954 under the sponsorship of the A. M. A.'s Council on Medical Service through its Committee on Federal Medical Services. These meetings have a fourfold purpose: (1) to develop a working liaison with state society committees concerned with veterans' problems; (2) to acquaint an increasing number of physicians with A. M. A. policy and the facts regarding veterans' care; (3) to learn the local situation regarding this policy in various states, and (4) to discuss ways of carrying out the instructions of the House of Delegates, which adopted a firm stand on veterans' medical care at its meeting last June. The present schedule calls for meetings early in the year: Feb. 19, Denver; Feb. 21, Portland, Ore.; Feb. 27, Omaha; and in March, Boston and either Chicago or Indianapolis. Four similar conferences were held last year in Dallas, Texas, Atlanta, Ga., New York, and Washington, D. C.

RADIO AND TV PLANS FOR 1954

America's physicians will be "on the airways" more than ever during the new year as the A. M. A.'s Bureau of Health Education announces plans for new radio and television programs. In response to the trend of listening audiences toward local radio shows, emphasis will be placed on locally originated programs both on radio and on television. Present television plans call for a 30-minute film relating to some aspect of medical care, to be produced jointly by the Bureau and the Department of Public Relations. This film probably will be available about the time of the A. M. A.'s June meeting. In addition, several new sequences will be developed in the "What to Do" series—the five-minute TV films that star popular woman's commentator Nancy Craig explaining safe procedures to follow in home emergencies.

Inaugurating a new service for state and county medical societies, the Bureau also is planning the preparation of "script-clip packages" for television. These packets will contain outline scripts that can be narrated by local doctors while film clips illustrating the topic are shown on the TV screen. Regarding radio plans, the Bureau will concentrate on new electrical transcriptions during 1954. These will be released approximately at the end of April, June, and October. The first will be devoted to science and superstition, and other topics will be announced later.

A. M. A. EXHIBITS

By special invitation, the American Medical Association will display its exhibit "The Organs of the Human Body," at the Smithsonian Institution in Washington, D. C., during 1954. After this year, this exhibit will be available for showings in other museums throughout the country. A new exhibit, "The Physician's Responsibility in Highway Accidents," calls the doctor's attention to the fact that he should warn patients about the dangers of driving while under the influence of sedatives, antihistaminics, or anticonvulsive drugs. For professional showings only, this exhibit may be booked through the A. M. A.'s Bureau of Exhibits.

RURAL HEALTH CONFERENCES

The Council on Rural Health of the American Medical Association reports that State Rural Health Conferences will be held in the near future as follows:

Kentucky	March 10-11	Louisville, Ky.
Ohio	March 9-10	Columbus, Ohio
Washington	March 23-24	Yakima, Wash.
New York	March 25	Ithaca, N. Y.

The recent Colorado State–Rocky Mountain Regional Rural Health Conference was a great success. Sponsored by the Colorado State Medical Society, it was the first of its kind held in this country. Dr. Fred Humphrey, Regional Director for the Rocky Mountain states, and Dr. M. L. Tyler, chairman, rural health committee, Colorado State Medical Society, invited other regional states to send leaders, and all except one did so, with Montana having nine in attendance. States outside of the region having representatives were North Dakota, Oregon, and Nebraska. The program was excellent, and the interest and participation of the audience, it was said, "was the best we have seen anywhere."

MEDICAL NEWS

CALIFORNIA

Pediatric Clinic Established.—A pediatric clinic that was recently added to the services of St. Francis Memorial Hospital, San Francisco, will be open every Tuesday at 10 a. m. Under the supervision of the pediatrics committee of the hospital, with Dr. John M. Rector as chairman, the clinic will be in charge of a resident physician. Members of the committee will act as consultants on a rotating basis for two-month periods. A prerequisite for admission to the clinic will be (1) referral by a member of the medical staff or (2) being a child of an obstetric clinic mother. The charge per clinic visit will be $1. Charges for hospitalization will vary with the individual patient after consultation between the referring physician, the clinic consultant, and the hospital administration. Appointments may be made by calling the pediatrics clinic.

Symposium on Diabetes.—The second annual diabetes symposium will be held at the Los Angeles County Medical Association Feb. 3. Dr. Frederick W. S. Modern, Long Beach, president, Los Angeles Diabetes Association, will preside over the afternoon session, 2-5 p. m., and Dr. Edward Shapiro, Beverly Hills, president, Los Angeles Society of Internal Medicine, over the evening program, which will follow a 6:30 p. m. dinner meeting that is open to members and guests. Guest speakers include: (1) Dr. Alexander Marble, Joslin Clinic, Boston, who will present "Mucopolysaccharides in Diabetes" at 3:45 p. m. and "The Relation of Control of Diabetes to the Development of Vascular Complications" at 8 p. m.; (2) Dr. Meyer Friedman, Harold Braun Research Institute, Mount Zion Hospital, San Francisco, who will speak on pathogenesis of hypercholesteremia at 4 p. m.; and (3) Arne N. Wick, Ph.D., head of the Research Institute of Scripps Metabolic Clinic, La Jolla, who will summarize problems of metabolism in diabetes with the cooperation of Dr. Douglas R. Drury, chairman of the physiology department, University of Southern California School of Medicine, Los Angeles.

CONNECTICUT

Dr. Strong Goes to Buffalo.—Leonell C. Strong, Ph.D., who has been research associate at Yale University School of Medicine, New Haven, since 1933, has been appointed associate cancer research scientist at the Roswell Park Memorial Institute, Buffalo. Dr. Strong has received medals of merit from the universities of Louvain and Liége in Belgium and has lectured throughout this country and Europe on cancer and cancer research. Before becoming associated with Yale University, Dr. Strong served from 1930 to 1933 as research associate at the Roscoe B. Jackson Memorial Institute in Bar Harbor, Maine, and from 1927 to 1930 as associate professor of genetics and research associate in cancer at the University of Michigan Medical School, Ann Arbor.

Scholarship Program.—The Connecticut State Medical Society recently granted the first awards in its new scholarship program for medical students. The recipients of the $500 scholarships are Richard M. Demko, Rockville, who is studying at New York University College of Medicine, Francis Hobson, Plainville, at Meharry Medical College, Nashville, Tenn., and Michael L. Fezza, New Haven, at New York Medical College, Flower and Fifth Avenue Hospitals. Applicants must be fourth year students at an approved medical school and be recommended for scholarship consideration by the dean of their school, a Connecticut physician, and another resident other than a relative. Information concerning the program has been sent to all approved medical schools in the United States and Canada.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

ILLINOIS

Psychiatric Lectures.—In its series on treatment in psychiatry, which is open without charge to all physicians, the North Shore Health Resort (225 Sheridan Road, Winnetka) offers a lecture "The Use of Shock Therapy and Psychosurgery" by Dr. Lothar B. Kalinowsky, attending psychiatrist at the New York State Psychiatric Institute, on Feb. 3, 8 p. m., at the health resort.

Ice Box Deaths.—Because of the increasing number of accidental deaths of children by smothering in discarded ice boxes, a new Illinois law prescribes a penalty of "not more than $50 fine or imprisonment of not more than 30 days, or both" for anyone who abandons or discards a refrigerator, ice box, or ice chest in a place accessible to children or who knowingly permits such an abandoned ice box to remain there without removing the hinges or door.

Chicago

Historical Exhibits.—John Crerar Library is presenting an exhibit by Drs. George Eisenberg and Louis D. Minsk on babies' feeding bottles and medicinal spoons, dating from 400 A. D. to the present. The University of Illinois College of Medicine is exhibiting ancient trepanned skulls and early American instruments in trepanation.

Symposium on Pediatrics.—Dr. John A. Bigler will serve as moderator for the following symposium that will be presented by the North Side branch of the Chicago Medical Society at the Drake Hotel, Feb. 4, 8 p. m.: "Heart Murmurs in Children," Dr. Stanley Gibson; "Convulsions in Children," Dr. Douglas M. Buchanan; "Neurological Manifestations in the Newborn," Dr. Abraham Levinson; and "Mental Retardation," Dr. Bigler. General discussion will follow. A fellowship gathering at 5:30 p. m. will precede dinner. For reservations, call CEntral 6-7764.

Parent-Teacher Meetings.—Dr. Samuel C. Henn is serving as moderator for the symposium "Our Responsibilities as Parents" that is being presented on the first Tuesday of the month (8 p. m. in the Chicago Vocational High School, 2100 E. 87th St.) by the Avalon Park Parent-Teacher Association in cooperation with the Chicago Board of Education. On Jan. 5, Dr. John S. Garvin discussed "Responsibilities in the Home," and, on Feb. 2, Dr. Helen C. Newman, physician of the laboratory school, University of Chicago, will discuss "Responsibilities in the School."

Lectures on Virology.—The Chicago Medical School, 710 S. Wolcott Ave., is offering this series Tuesdays, 12:30 p. m., in Amphitheater A. "The Nature of Viruses" was presented Jan. 12 by Dr. Salvador A. Luria, professor of bacteriology, University of Illinois, Urbana, and "The Pathogenesis of Virus Diseases" by Dr. John E. Kempf, professor of bacteriology, University of Illinois College of Medicine, Jan. 19. Other presentations will include:

Feb. 2, Development of Virus Vaccines, Albert Milzer.
Feb. 9. Epidemiology of Certain Virus Diseases, William I. Fishbein.
Feb. 16, Newer Knowledge of the Epidemiology of Influenza, Fred M. Davenport, Ann Arbor, Mich.
Feb. 23, Rabies, James G. Shaffer, Sc.D.
March 2, Survey of Recent Advances in the Laboratory Diagnosis of Virus and Rickettsial Diseases, Harry B. Harding.

Clinical Conference on Ophthalmology.—The Chicago Ophthalmological Society will hold a clinical conference Feb. 5-6 at the Drake Hotel. Symposiums and round-table luncheons on headache and surgery of the lids will be presented. Lectures include: "Technic and Results of the Recession Operation for Squint," "Lens Metabolism," "Dacryocystorrhinostomy," "Vertical Divergence of the Eyes and the Use of Prisms," and "On the Basis of Stereopsis in Binocular Vision." Participants include Drs. Percival Bailey, Benjamin Boshes, Fremont A.

Chandler, Robert W. Keeton, and Francis L. Lederer, Chicago; Dr. Alston Callahan, Birmingham, Ala.; Dr. Charles E. Iliff, Baltimore; Dr. Placidus J. Leinfelder, Iowa City; Kenneth N. Ogle, Ph.D., Rochester, Minn.; and Dr. Kenneth C. Swan, Portland, Ore. At 5:30 p. m. Dr. Swan will deliver the 10th Gifford memorial lecture, "The Blind Spot Mechanism," to which all ophthalmologists are invited. The fee for the conference ($35) includes round-table luncheons. Registrar is Miss Maude Fairbairn, 8 W. Oak St., Chicago 10.

INDIANA

Hospital News.—Dr. Franklin G. Rudolph, Hammond, has given seven acres of land, one-quarter mile south of Youche Country Club, for the proposed 100-bed hospital for southern Lake County. The property is part of his farm.

Cardiac Symposium.—The fourth annual symposium on the heart, sponsored by the Indiana University School of Medicine and the Indiana Heart Foundation, will be presented at 2 p. m. Feb. 3 in the medical school auditorium on the Indianapolis campus. Guest speakers will be Dr. George E. Burch, Tulane University of Louisiana School of Medicine, New Orleans, who will discuss electrocardiography, and Dr. Fredrick J. Stare, Harvard School of Public Health, Boston, who will present certain aspects of nutrition as they relate to heart disease.

LOUISIANA

Symposium on Eye Infections.—The New Orleans Academy of Ophthalmology, Feb. 1-5, will feature the symposium "Infectious Diseases of the Eye." Those leading the symposium include:

Phillips Thygeson, San Jose, Calif., Virus Infections of the Lids and Conjunctiva. Bacterial Infections of the Conjunctiva.
Trygve Gundersen, Boston, Infectious Diseases of the Cornea.
Alson E. Braley, Iowa City, Allergy and Drug Sensitivity.
Hugh L. Ormsby, Toronto, Canada, Infectious Diseases of the Lids, Lid Margins, and Lacrimal Apparatus.
Michael J. Hogan, San Francisco, Infectious Diseases of the Episclera, Sclera, and Uveal Tract. Surgical Infections.
Gustav C. Bahn, New Orleans, Infections of the Orbit.
James H. Allen, New Orleans, Ocular Bacteriology.

The program will include round-table discussion periods. Registration fee of $75 includes associate membership in the academy for the year 1954.

Pathologists Meet in New Orleans.—The South Central Region of the College of American Pathologists, the Louisiana Association of Pathologists and the Louisiana Pathology Society will meet jointly at the Roosevelt Hotel, New Orleans, Feb. 5-6. Friday will be devoted to a seminar on forensic pathology, for which Dr. Stanley H. Durlacher, pathologist in chief, coroner's office, Parish of Orleans, will serve as moderator. Guest conductors will be Dr. Russell S. Fisher, chief medical examiner, state of Maryland, and Dr. Richard Lindenberg, Baltimore. On Saturday the following presentations will be made by New Orleans speakers:

Specific Diagnosis of Infections with Poliomyelitis Viruses, John P. Fox.
Pathologic-Physiology of the Kidney and Kidney Function Tests, Samuel B. Nadler.
Studies in the Pathogenesis of Idiopathic Thrombocytopenic Purpura, Charles C. Sprague.
Modern Methods for the Determination of Calcium, Roland A. Coulson, Ph.D.
Occurrence and Significance of Abnormal Hemoglobin, Eugene Kaplan.
Problems in the Laboratory Diagnosis of Strongolydiasis, Clyde Swartzwelder, Ph.D.
Semen Examination, Technique and Interpretation, Paul L. Getzloff.
Interpretation of the Testicular Biopsy, Albert Segaloff and William H. Sternberg.

MARYLAND

Research Fellowship in Hematology.—The department of clinical pathology, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, has announced the establishment of a research fellowship in hematology made possible by a donation of $15,000 by Mr. Morris S. Corman in memory of Mrs. Anna Corman. Proceeds from the fund may also be used to invite distinguished investigators to lecture or hold seminars on hematological subjects. The lectures will be known as the Anna Corman lectureship.

MINNESOTA

Reduction in Tooth Decay in Grand Rapids.—Frederick Wertheimer, D.D.S., Lansing, chief of the public health dentistry section, Michigan Department of Health, reports a 67% reduction in tooth decay in Grand Rapids children since fluoridation of the city water supply was initiated in 1945. In the latest examinations completed this year, half of the 6-year-old children in Grand Rapids were found to be entirely free of decay in the six year molars. Before fluoridation the figure for this age group was 17%. The examination also revealed 90% less decay in the front teeth, and studies of the sites of cavities showed practically no decay on the smooth surfaces of teeth. A marked decrease was noted in the severity of decay. Decay in the teeth of children who had been drinking fluoridated water since birth was very mild in comparison with that found in children before fluoridation began. Cavities were generally smaller and required less extensive repair.

Personal.—Dr. Clifford G. Menzies, Iron Mountain, has been appointed director of the health center at Michigan State College, East Lansing. Dr. Menzies was formerly physician for the Ford Motor Company, the Kingsford Chemical Company, and the Aluminum Specialty Company, all in Iron Mountain.——Dr. Silas V. Dusseau, 85, was the central figure in Erie's annual VJ-Day celebration when he received a citation from the auxiliary of Erie Post 3925 of the Veterans of Foreign Wars, a good citizenship medal from the post itself, and a silver tray from Erie Township, whose health officer he has been for 40 years.——Dr. James M. Shaffer, assistant professor of epidemiology, University of Michigan Medical School, Ann Arbor, has been appointed director of the division of clinical investigation of McNeil Laboratories, Philadelphia. Dr. Shaffer, a research fellow at the University of Minnesota Medical School, Minneapolis, 1947-1948, was instructor in medicine and pharmacology at the school from 1950 to 1952. From 1948 to 1950 he served as captain in the U. S. Army Medical Corps.——Dr. Ferdinando A. Morin, Wayne University College of Medicine, Detroit, has been granted a three month leave of absence to conduct medical research at the universities of Padua and Pisa in Italy, where he plans to further international collaboration in the research field of central nervous system disorders, including epilepsy.

MISSISSIPPI

Society News.—At the annual meeting of the Mississippi Valley Medical Society the following officers were elected: Dr. Arthur S. Bristow, Princeton, Mo., president-elect; Dr. Harold Swanberg, Quincy, Ill., secretary-treasurer; and Dr. Jacob E. Reisch, Springfield, Ill., assistant secretary-treasurer. Dr. Norris J. Heckel, Chicago, is the 1954 president.

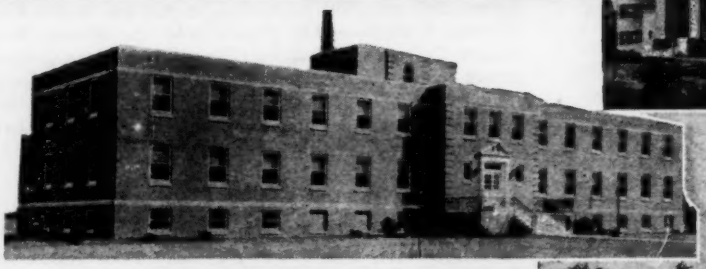
NEBRASKA

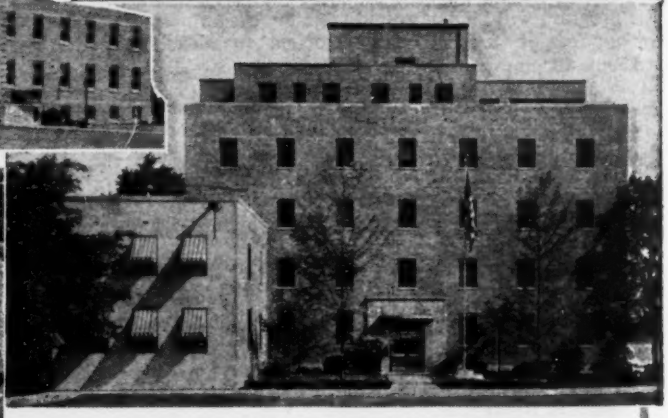
Society News.—At the annual meeting of the Omaha Mid-West Clinical Society, Dr. B. Carl Russum was installed as president. Dr. Frederick W. Niehaus was chosen president-elect, and Dr. Louis E. Moon remains secretary-treasurer.

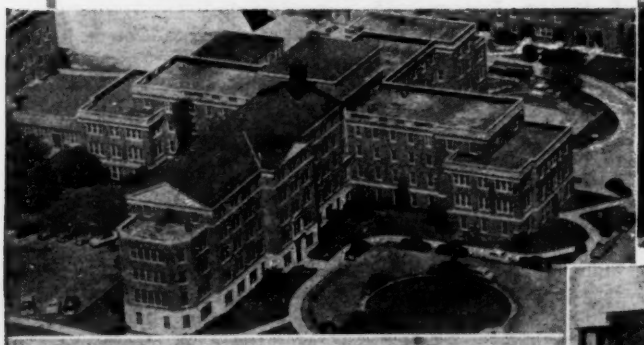
State Society Accorded Pharmaceutical Honor.—The Formulary plan of the Nebraska State Medical Association received national recognition when the New York State Pharmaceutical Association selected Daniel F. Moravec, chief pharmacist, Lincoln General Hospital, who submitted the plan, as the winner of the first prize ($500) in a nation-wide contest to determine ways of overcoming economic problems resulting from the widespread duplication of medicinal products manufactured and sold under trade names. The Formulary plan of the Nebraska State Medical Association, which is approved by the Nebraska Pharmaceutical Association, includes the encouragement of the members of both associations to make use of the National Formulary in their practice; the initiation of an educational program by the state medical association for the purpose of pointing out advantages of prescribing by generic rather than copyrighted name; a general publicity program in the publications of both the medical and pharmaceutical associations; and the appointment of an active committee on revision of the formulary for the purpose of keeping abreast of progress in modern therapeutics.

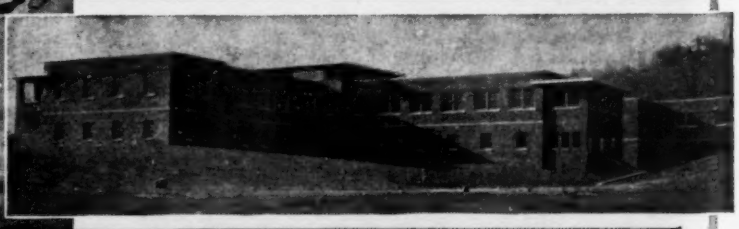
NEW JERSEY HOSPITALS

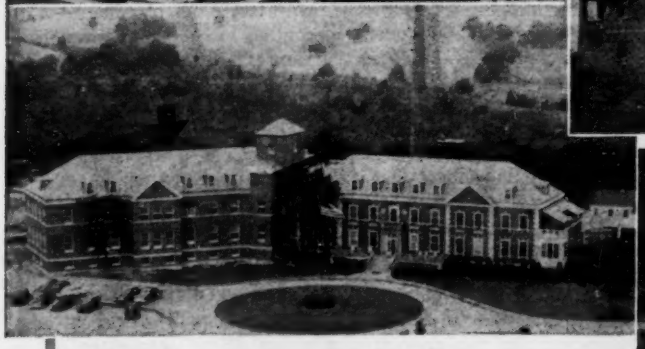
Reading from top and left to right are Bergen Pines County Hospital, Paramus; Valley Hospital, Ridgewood; Our Lady of Lourdes Hospital, Camden; Burdette-Tomlin Memorial Hospital, Cape May Court House; Riverview Hospital, Red Bank; Fitkin Memorial Hospital, Neptune; Overbrook Hospital, Cedar Grove; Newton Memorial Hospital, Newton; and Hunterdon Medical Center, Hunterdon County.

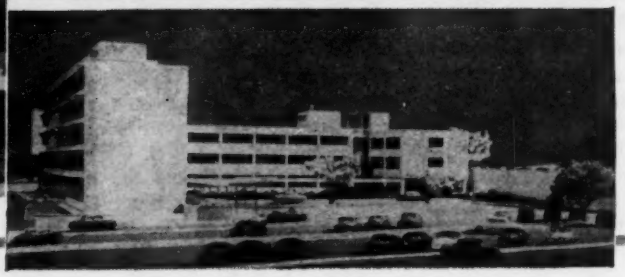












NEW JERSEY

New Jersey Hospitals Built with Hill-Burton Aid.—The state of New Jersey has just published a progress report on hospitals constructed in the state with the aid of the Federal Hospital Survey and Construction Act (Hill-Burton). Reprinted from this report on the opposite page of this issue of THE JOURNAL are pictures of some of these hospitals. The Hill-Burton act was passed in August, 1946, and in January, 1948, the first New Jersey state plan for the construction of hospitals and health centers received the approval of the U. S. Public Health Service. When the state progress report was published in 1953, allocations of federal grants-in-aid had been made to 27 hospitals. Since then a small health center at North Arlington has been approved and is now in the planning stage. The federal grants-in-aid for these projects vary between 33⅓% and 40% of the approved project costs. The encouragement given by the Hill-Burton act in New Jersey is borne out by the fact that more than 5,000 hospital beds, together with auxiliary services, will be built as a result of the program, not including some 1,300 beds in the fourth state mental hospital at Ancora, which has been approved by public referendums. Many of the hospitals built under the Hill-Burton program could not have been built without such assistance.

The Bergen Pines County Hospital, the first one at the top of the picture on the opposite page of THE JOURNAL, is one of the few county general hospitals in New Jersey. The federal participation in this project was in the chronic facilities only, which provides 124 beds on the fifth and sixth floors. The entire hospital provides 363 beds, including medical, surgical, mental, chronic, and outpatient facilities. While there are no delivery or labor rooms, the building contains an unfinished portion that could be completed for these services. The Valley Hospital at Ridgewood, the first one shown below and to the left of the Bergen Pines County Hospital was realized after 26 years of effort. It is a completely new 124-bed general hospital in an area that formerly was without hospital facilities. The Fitkin Memorial Hospital at Neptune shown on the opposite page with the two arrows on the roofs was partially completed before the project was picked up for federal participation. This project consisted of the addition of two wings, indicated by the arrows, to the existing facilities. The two-story rear wing provides interns quarters, a morgue, storeroom, and other facilities. The entire structure has 251 hospital beds.

The New Jersey plan for the construction of hospitals is revised annually. While much has already been done, a great deal remains to be done. By the year 1960 the State Department of Institutions and Agencies estimates 10,246 additional hospital beds will be needed. As of Nov. 30, 1953, 44 construction projects were being planned but had not been reduced to applications, and at that time there were 30 projects on which either plans or applications for grants-in-aid had been received and 17 projects under construction. According to the state report for November, the total cost of the 77 projects anticipating hospital construction will be close to 100 million dollars.

NEW YORK

All-Day Program on Cardiovascular Diseases.—A graduate teaching program on cardiovascular diseases, available without charge to all physicians within commuting distance, will be held Feb. 4 at the Albany Law School in Albany, under the sponsorship of the Heart Association of Albany County, Albany County Medical Society, Albany Medical College, Veterans Administration Hospital, and the New York State Department of Health. The guest speakers include:

Harry Goldblatt, Cleveland, Renal Aspects of Hypertension.
William Goldring, New York, Definition and Clinical Course of Hypertensive Disease.
A. Stone Freedberg, Boston, Use of Radioactive Iodine in Coronary Heart Disease.
Paul M. Zoll, Boston, Management of Coronary Heart Disease.

The guest speakers will be joined by four local physicians for panel discussions on hypertensive disease at the end of the morning session and on coronary heart disease at the end of the afternoon program.

Seventh Gordon Lecture.—Zeta Chapter of Phi Delta Epsilon Fraternity at the State University of New York College of Medicine at Brooklyn (formerly Long Island College of Medicine) is sponsoring the seventh annual Murray B. Gordon lecture Feb. 2, 5:15 p. m., at the Polhemus Memorial Clinic, 350 Henry St., Brooklyn. Dr. Frederick A. Mettler of the department of neurology, Columbia University College of Physicians and Surgeons, New York, will discuss "Newer Aspects of Involuntary Movement."

New York City

Meeting on Arteriosclerosis.—Dr. David P. Barr, professor of medicine, Cornell University Medical College, will serve as moderator for a panel discussion Feb. 5 on current concepts in the management of arteriosclerosis, with Dr. David Adlersberg, Dr. William Dock, Forrest E. Kendall, Ph.D., and Dr. Charles F. Wilkinson Jr., as participants. This is one of a series of monthly panel meetings on therapeutics for the general physician, given at the New York Academy of Medicine, Fridays, 4:30 p. m.

Cancer Meeting.—The New York Cancer Society will present the following program on physiological alterations in cancer Feb. 2, 8:30 p. m., at the New York Academy of Medicine, Fifth Avenue at 103rd St.:

Metabolic Observations in Cancer Cachexia, Robert Elman, St. Louis.
Alterations in Gastrointestinal Tract Physiology Following Gastrectomy for Cancer of the Stomach, Henry T. Randall, Kathleen E. Roberts, Gordon P. McNeer, George T. Pack, and Jacob Weissman, New York.

Discussion will be by Dr. Isidor S. Ravdin, University of Pennsylvania Hospital, Philadelphia. All physicians and medical students are cordially invited.

Hermann Biggs Lecture.—Alfred C. Kinsey, Sc.D., professor of zoology, Institute of Sex Research, Indiana University, Bloomington, will deliver the 29th annual Hermann M. Biggs memorial lecture, under the auspices of the committee on public health relations of the New York Academy of Medicine, Feb. 4, 8:30 p. m. His subject will be "Data on Female Sexual Behavior: Their Application in Clinical Medicine and Public Health." Discussants will be Dr. Sophia J. Kleegman, associate clinical professor of obstetrics and gynecology, New York University School of Medicine; Carney Landis, Ph.D., professor of psychology, Columbia University, and George P. Murdock, Ph.D., professor of anthropology, Yale University, New Haven, Conn.

Forensic Medical Meeting.—Hon. Henry Clay Greenberg, justice, Supreme Court, State of New York, will present "The Medical Witness and Medical Testimony in Negligence and Malpractice Cases" Feb. 1, 8:30 p. m., in the main lecture hall, New York University College of Medicine (477 First Avenue, near 28th St.). Discussants include Mr. William F. Martin, counsel, Medical Society of the State of New York; Mr. Harry A. Gair; Dr. Thomas M. D'Angelo, Jackson Heights, N. Y., malpractice and insurance board, Medical Society of the State of New York; Dr. Henry K. Taylor, professor of clinical radiology, New York University College of Medicine; and Delmar Karlen, visiting professor of law, New York University School of Law. A question period from the audience will follow. Dr. Maxwell H. Poppel, professor of radiology, New York University College of Medicine, will preside. Members of the medical and legal professions are cordially invited.

Hospital News.—A number of vacancies are available for the positions of resident and assistant resident on the house staff and also for those of clinical assistant and assistant visiting physician on the visiting staff on the second medical and neurological service of the Goldwater Memorial Hospital, a hospital for chronic diseases with special facilities for the study of geriatric medicine. Application forms may be obtained from Dr. Benjamin Jablons, Acting Director, Second Medical Division, Goldwater Memorial Hospital, Welfare Island 17.—— Montefiore Hospital for Chronic Diseases was given one of the first two William J. Shroder memorial awards by the Council of Jewish Federations and Welfare Funds, which held its general assembly in Cleveland, Nov. 22, 1953. The award, a plaque with an inscribed silver scroll was made "for superior

initiative and achievement in the advancement of social welfare." It was given in recognition of the home care program inaugurated in 1927 through which more than 700 patients have received more than 200,000 days' care, thereby (1) cutting the medical expenses of the patient and the cost to the hospital for those patients unable to pay, (2) releasing beds needed for more seriously ill patients, and (3) diminishing the need for costly construction of additional facilities.——Dr. Alexander Brunschwig, professor of clinical surgery, Cornell University Medical College, will present "Experiences in Excision of Primary and Secondary Tumors of the Liver" Feb. 5, 3 p. m., at Montefiore Hospital for Chronic Diseases.

OHIO

Society News.—The Academy of Medicine of Cincinnati will have as guest speaker on Feb. 2, Dr. John H. Mulholland, professor of surgery, New York University College of Medicine, whose topic will be "Benign Diseases of the Pancreas." On Feb. 16 the academy will present the symposium "Management of Massive Hemorrhage" for which Dr. Paul I. Hoxworth, Cincinnati, will serve as moderator. Participants will be Drs. Stanley O. Hoerr, Cleveland, John D. Stewart, Buffalo, and Leon Schiff, Cincinnati.

Personal.—Dr. Addison L. Kefauver, Columbus, has been appointed medical director of the Industrial Commission of Ohio to succeed Dr. Robert M. Andre, who has been named medical director of the Goodyear Atomic Corporation plant in Pike County. Dr. Kefauver had been assistant to Dr. Andre for 12 years.——Dr. John J. Phair, professor of preventive medicine, University of Cincinnati College of Medicine, has been reelected secretary of the section on epidemiology of the American Public Health Association and of the Conference of Professors of Preventive Medicine.

OREGON

Postgraduate Courses.—The University of Oregon Medical School, Portland, announces that the winter and spring postgraduate series will open Feb. 1 with a three day course in obstetrics and gynecology. Dr. Alec M. Agnew, clinical professor and chairman of the department of obstetrics and gynecology at the University of British Columbia, Vancouver, will be guest lecturer. A general surgery course (registration limited to 20) will be given March 1-5. Dr. Garfield G. Duncan, clinical professor of medicine, Jefferson Medical College of Philadelphia, will lecture to the group studying metabolism and endocrinology, March 8-10. A course on dermatology, March 29-31, will be followed by a course on cardiology, featuring Dr. J. Scott Butterworth, associate professor of medicine, New York University College of Medicine, as principal speaker.

PENNSYLVANIA

Infectious Hepatitis.—According to the U. S. Public Health Service, Dr. J. D. Purvis, Pennsylvania Department of Health, has reported several outbreaks of infectious hepatitis. In one small community the disease is considered to have been spread through contacts in school busses, 40 cases resulting. In another area an outbreak began the middle of last October, and cases are still occurring. Cases have been concentrated in one town, but scattered cases in the county and surrounding counties have been reported. A total of 125 cases have been reported. In a third community, 100 cases and 100 suspect cases were noted from April through November, 1953. With the opening of school, cases began to increase, but gamma globulin inoculations brought the outbreak under control. The fourth outbreak, consisting of 156 cases throughout 1953, occurred in another area.

Philadelphia

Irvine Page to Give Hatfield Lecture.—On Feb. 3, 8:30 p. m., the College of Physicians of Philadelphia will present the Nathan Lewis Hatfield lecture. Dr. Irvine H. Page, director of research, Cleveland Clinic Foundation, will discuss "The Nature and Treatment of Hypertension."

Pittsburgh

Fifteen Million Dollars Given to Medical School.—The chancellor of the University of Pittsburgh announced on Jan. 18 the receipt of an endowment grant of 15 million dollars to the medical school, to build a strong full-time faculty as a supplement to the present staff of part-time faculty members. The gift, made jointly by the A. W. Mellon Educational and Charitable Trust, the Sarah Mellon Scaife Foundation, and the Richard King Mellon Foundation, all of Pittsburgh, will be used to support broad innovations in medical teaching proposed by Dr. Robert A. Moore, recently appointed vice-chancellor in charge of the schools of the health professions (THE JOURNAL, Dec. 19, 1953, p. 1455). Dr. Moore stated that the grants will make possible a development that will provide in the highest degree "three principal objectives: education of practitioners, research to discover new knowledge of the cause, prevention and cure of disease, and patient care." His program involves improvements in the organization and operation of the school of medicine, establishment of closer liaison between that school and the schools of public health, nursing, pharmacy, and dentistry, and the coordination of these five schools with the center hospitals and related clinics and institutions.

Although the grant is the largest received by the university in its 167 year history, Chancellor R. H. Fitzgerald pointed out that an additional 15 million dollars must be obtained during the next five years to complete the program projected by Dr. Moore and that the present gift is not related to the current fund-raising program to permit construction of a new 15 million dollar building to house the schools of medicine, nursing, dentistry, and pharmacy. During the past year more than 7 million dollars has been subscribed to this objective by Pittsburgh industries and an additional 2 million dollars is available from a previous campaign.

Architect's drawing of the new building that will house the University of Pittsburgh's schools of medicine, nursing, dentistry, and pharmacy. It is expected that construction will begin next summer.

Lowell J. Reed, Ph.D., president of Johns Hopkins University, Baltimore, principal speaker at the dinner, hailed the gift as a demonstration of private enterprise contributing to the future welfare of the country, commenting, "It has been recognized by many educational and research surveys that this country will suffer irreparable loss if the private universities are not provided with the facilities that will enable them to grow in scope and excellence. Unless we want these institutions to be tax-dominated, private enterprise and capital must find their way of supporting higher education." Other speakers included Joseph C. Hinsey, Ph.D., director of the New York University-Cornell Medical Center, and Dr. William S. McEllroy, dean of the Pittsburgh School of Medicine.

The school was founded in 1886 as the Western Pennsylvania Medical College and in 1892 became the Medical Department of the Western University of Pennsylvania. In 1908, the Western University of Pennsylvania became the University of Pittsburgh and the affiliated medical college became the school of medicine. The present physical facilities of the university's health center have an estimated valuation in excess of 80 million dollars. Much of the growth has occurred during the past seven years, during which 30 million dollars has been made available for construction of the center in addition to the present 15 million dollar endowment grant.

RHODE ISLAND

Anesthesiologists Meet in Providence.—The New England Society of Anesthesiologists will meet Feb. 5 at the Rhode Island Hospital, Providence. The morning session will be devoted to the operative schedule, demonstration of pressure breathing apparatus, and discussion of teaching aids in anesthesia. During the afternoon, Dr. Leroy S. Chapnick, Providence, will present "Use of Fructose Intravenously as a Possible Substitute for Dextrose"; Dr. Harold W. Williams, Providence, "Respiratory Arrest—Its Effect on the Central Nervous System"; and Dr. Meyer Saklad, Providence, "Pressure Breathing in Anesthesia and Resuscitation." Dr. Kenneth K. Keown, Philadelphia, will discuss "Hypothermia for Cardiac and Great Vessel Surgery" at the evening meeting (7:30-9 p. m.).

TEXAS

Lectures in Ophthalmology.—At its meeting Feb. 2 and 3 the Dallas Academy of Ophthalmology and Otolaryngology will have as honor guest Dr. Brittain F. Payne, New York, who will present "Extraction of Complicated Cataracts" on Tuesday at 2 p. m., and "Complications Following Intraocular Operations" at 7:30 p. m. On Wednesday, 2 p. m., he will discuss "Operations for Retinal Detachment" and at 7:30 p. m. "Plastic Operations on the Eyelids." Luncheons (1 p. m.) and dinners (6:30 p. m.) honoring Dr. Payne will be given at the Melrose Hotel on both days.

GENERAL

Western Society for Clinical Research.—The annual meeting of the Western Society for Clinical Research will be held Jan. 29-30 at the University of Oregon School of Medicine, Portland. Twenty-nine papers were scheduled to be read by title and 37 to be presented. The latter include the following single author reports:

Number and Distribution of Human Hemic Cells, Edwin E. Osgood, Portland, Ore.
Some Properties of an Antimitochondrial Gamma Globulin, H. S. Mason, Seattle.
Influence of Cortisone on the Efficacy of Antibiotic Therapy in Experimental Infections, Ernest Jawetz, San Francisco.

Trudeau Clinical Session.—A tri-state clinical conference is being sponsored by the Trudeau societies and the tuberculosis associations of Illinois, Indiana, and Missouri at Pere Marquette Lodge, Grafton, Ill., Feb. 27-28. The conference will review a number of cases from hospitals in the three states, including 25 admissions in mental institution tuberculosis hospitals in Illinois. A guest consultant from the Philadelphia area will present cases from Pennsylvania tuberculosis hospitals. Application to attend the conference, limited to 75 (25 members from each of the three states) should be made to the executive secretaries of the respective state tuberculosis associations by Feb. 1.

Interprofessional Conference in Washington.—On Feb. 4 the American Pharmaceutical Association will sponsor a conference in the lecture room of the National Academy of Sciences, 2101 Constitution Ave., N. W., Washington, D. C., to which representatives of the health professions and of all phases of pharmacy have been invited. The meeting has been called to (1) determine the adequacy of the Federal Food, Drug and Cosmetic Act and state laws governing the practice of pharmacy, with regard to the distribution of drugs under present day methods and facilities for supplying medical care to the public, which will be considered during the morning session, beginning at 11 o'clock, and (2) develop an interprofessional code of ethics based on modern methods and facilities for supplying medical care to the public. The latter discussion, beginning at 2 p. m., will be devoted to consideration of the need for interprofessional understanding and cooperation in the interests of the prevention and treatment of disease.

Allergy Meeting in Houston.—The American Academy of Allergy will hold its 10th annual meeting at the Shamrock Hotel, Houston, Texas, Feb. 1-3 under the presidency of Dr. Ben Z. Rappaport, Chicago. The Monday afternoon session will open with the discussion "The Development of Immunohematologic Concepts" by Dr. William Dameshek, Boston, which will be followed by the color film "Effects of Histamine and Epinephrine on the Small Pulmonary Blood Vessels of Living Rabbits: An Experimental Study" by Drs. Walter S. Burrage, John W. Irwin, and Mr. James I. Gallemore, Boston. Tuesday morning "Immunochemical Studies of House Dust Allergen" will be presented by invitation by Dan H. Campbell, Ph.D., Donald Z. Silver, Ph.D., and Dr. Wilton E. Vannier, Pasadena, Calif. Presentation of "Allergy in Our Time" by Dr. M. Murray Peshkin, New York, president, American College of Allergists, precedes the presidential luncheon at which Dr. Rappaport will deliver his address. Tuesday afternoon Dr. Frank J. Dixon, Pittsburgh, will discuss "The Dynamics of the Immune Response."

Society News.—At the annual meeting of the **Southern Psychiatric Association** in Biloxi, Miss., Dr. John D. Trawick Jr., Louisville, took office as president. Other officers include Dr. Joseph E. Barrett, Richmond, Va., president-elect, Dr. Titus H. Harris, Galveston, Texas, vice-president, Dr. Frank A. Donaldson, Jackson, Miss., second vice-president, and Dr. Joseph L. Knapp, Dallas, Texas, secretary-treasurer.——At the annual meeting of the **Central Neuropsychiatric Association** in Indianapolis in October, the following officers were elected: Dr. Mabel G. Masten, Madison, Wis., president; Dr. Benjamin Boshes, Chicago, president-elect; Dr. Francis J. Gerty, Chicago, vice-president; Dr. Hamilton Ford, Galveston, Texas, secretary-treasurer; and Dr. Lealdes M. Eaton, Rochester, Minn., counselor.——At the annual meeting of the **Association for Research in Nervous and Mental Disease** in New York, the following officers were elected: Dr. Rustin McIntosh, New York, president; Dr. Walter O. Klingman, Charlottesville, Va., first vice-president; Dr. William S. Langford, New York, second vice-president; Dr. Clarence C. Hare, New York, secretary-treasurer; and Dr. Rollo J. Masselink, New York, assistant secretary. The subject for the 1954 meeting will be "Psychiatry and Neurology of Childhood."——Among the presentations to be made at the annual convention of the **National Association for Somatoprosthetics and Rehabilitation,** Conrad Hilton and Congress hotels, Chicago, Feb. 4-7, will be "Rehabilitation Problems in Tumor Surgery of the Jaws" by Dr. Orion H. Stuteville, Evanston, Ill. Drs. Arthur E. Smith and Marsh Robinson, Los Angeles, will deliver surgical lectures with color motion pictures on ankylosis, bone reconstruction, implants, rhinophyma fracture reduction and immobilization, and cleft palate.

CANADA

Conference on Silicosis.—The McIntyre Research Foundation will hold its Sixth Conference on Silicosis, Feb. 1-3, at the King Edward Hotel, Toronto. Presentations by physicians will include:

Silicosis—Historical Sidelights and Reflections, Reginald E. L. Watson, Montreal.
Practical Aspects of Silicosis Control, Louis W. Spolyar, Indianapolis.
Aluminum Therapy in Australia and British Columbia, Wilmot D. Robson, White Rock, British Columbia.
Lung Function and X-Ray Studies Following Aluminum Therapy
(A) Foundry Industry, Leslie H. Osmond, Pittsburgh.
(B) Ceramic Tile Industry, Fred W. Kehr, Olean, N. Y.
Progress in Silicosis Control, Anthony J. Lanza, New York.
Preliminary Experience with Dr. Gough's Large Section Technique in the Study of Silicosis and Other Pulmonary Dust Conditions, Allan J. Blanchard, Toronto, and Andrew R. Riddell, Ontario.
Further Progress in the Development of Statistics on Silicosis in Ontario Mines, Alfred H. Sellers, Toronto.
The X-Ray Film in the Differential Diagnosis of Silicosis, Charles M. Waggoner, Columbia, Mo.
Industrial Exposures to Aluminum Dust, Paul G. Bovard, Tarentum, Pa.
Pneumoconiosis of Foundry Workers, Oscar A. Sander, Milwaukee.
Radiographic Classification of the Pneumoconiosis, Ian McCallum, Durham, England.

FOREIGN

Joint Meeting on Anesthesiology.—The second meeting of the German, Austrian, and Swiss societies of anesthesiologists will be held April 24-26 in the German Museum on the Isar-Isle, Munich. Papers to be presented include: "Anesthesia in Neurosurgery," "Clinical Judgement of the Depth of Anesthesia," "Function of the Lungs and Anesthesia," "Artificial Hibernation," and "Treatment of Barbiturate Poisoning."

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.
1954 Annual Meeting, San Francisco, June 21-25.
1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.
1955 Annual Meeting, Atlantic City, N. J., June 6-10.
1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.
1956 Annual Meeting, Chicago, June 11-15.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH, Brown Hotel, Louisville, Ky., Feb. 24-25. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 7-9. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Baker Hotel, Dallas, Texas, Mar. 4-6. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

AMERICAN ACADEMY OF ALLERGY, Shamrock Hotel, Houston, Texas, Feb. 1-3. Dr. Alan G. Cazort, 1425 West 7th St., Little Rock, Ark., Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Drake Hotel, Chicago, Feb. 25-27 Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

AMERICAN ACADEMY OF GENERAL PRACTICE, Cleveland, March 22-25. Mr. Mac F. Cahal, 406 West 34th St., Kansas City 2, Mo., Executive Secretary.

AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE, John Marshall Hotel, Richmond, Va., Feb. 11-12. Dr. Leonard J. Goldwater, 600 W. 168th St., New York 32, Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Drake Hotel, Chicago, Feb. 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY:
WESTERN SECTION, University of Oregon Medical School, Portland, Ore., Feb. 6. Dr. Guy L. Boyden, 1735 N Wheeler Ave., Portland 12, Ore., Chairman.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Hotel Commodore, New York, March 11-13. Dr. Marion F. Langer, Room 210, 303 Lexington Ave., New York 16, Executive Secretary.

AMERICAN PROTESTANT HOSPITAL ASSOCIATION, Palmer House, Chicago, Feb. 10-12. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

AMERICAN PSYCHOSOMATIC SOCIETY, Jung Hotel, New Orleans, March 27-28. Dr. Theodore Lidz, 333 Cedar St., New Haven 11, Conn., Secretary.

AMERICAN RADIUM SOCIETY, The Homestead, Hot Springs, Va., March 14-16. Dr. Robert E. Fricke, 102 Second Ave. S.W., Rochester, Minn., Secretary.

CENTRAL SURGICAL ASSOCIATION, Statler Hotel, Detroit, Feb. 18-20. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, March 2-5. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago, Secretary.

CONFERENCE OF TEACHERS OF CLINICAL RADIOLOGY, Walton Room, Drake Hotel, Chicago, Feb. 6. Dr. Aubrey O. Hampton, 20 North Wacker Drive, Chicago, Chairman.

DALLAS SOUTHERN CLINICAL SOCIETY, Dallas, March 15-18. Dr. T. Haynes Harvill, 433 Medical Arts Bldg., Dallas 1, Texas, Secretary.

EASTERN SURGICAL SOCIETY, Boston, March 26-27. Dr. J. William Hinton, 130 East 79th St., New York, Secretary.

MICHIGAN CLINICAL INSTITUTE, Sheraton-Cadillac Hotel, Detroit, March 10-12. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Mich., Secretary.

MID-SOUTH POST GRADUATE MEDICAL ASSEMBLY, Hotel Peabody, Memphis, Tenn., Feb. 9-12. Dr. Thurman Crawford, 869 Madison Ave., Memphis, Tenn., Secretary.

NATIONAL CONFERENCE ON CARE OF THE LONG-TERM PATIENT, Edgewater Beach Hotel, Chicago, March 18-20. Dr. Dean W. Roberts, 615 N. Wolfe St., Baltimore 5, Director.

NATIONAL CONFERENCE ON TRICHINOSIS, A. M. A. Headquarters, Chicago, March 1. Dr. S. E. Gould, Wayne County General Hospital, Eloise, Mich., Chairman.

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, Jefferson Hotel, St. Louis, March 10-12. Dr. F. M. Foote, 1790 Broadway, New York 19, Executive Director.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:
TOPEKA, KANS., March 19. Dr. William C. Menninger, 3617 West 6th Ave., Topeka, Kansas, Governor.
RICHMOND, VA., Feb. 25. Dr. Charles M. Caravati, 807 West Franklin St., Richmond 20, Va., Governor.
SOUTHERN CALIFORNIA, Riverside, Feb. 13-14. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:
CHARLOTTE, N. C., Hotel Charlotte, Feb. 1-3. Dr. Thomas D. Sparrow, 403 North Tryon St., Charlotte 2, N. C., Chairman.
FRENCH LICK SPRINGS, Indiana, French Lick Springs Hotel, March 15-17. Dr. Carl H. McCaskey, 20 N. Meridian St., Indianapolis 4, Chairman.
OMAHA, NEB., Hotel Fontenelle, March 1-4. Dr. Earl A. Connolly, 107 South 17th St., Omaha, Chairman.
RENO, NEV., Riverside Hotel, Feb. 25-26. Dr. Kenneth F. Maclean, 120 N. Virginia St., Reno, Nev., Chairman.

SOCIETY OF UNIVERSITY SURGEONS, Sheraton Hotel, Rochester, N. Y., Feb. 11-13. Dr. C. Rollins Hanlon, 1325 South Grand Blvd., St. Louis, Secretary.

SOUTHEASTERN ALLERGY ASSOCIATION, Dinkler-Plaza Hotel, Atlanta, Ga., March 25-27. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 1, S. C., Secretary.

SOUTHEASTERN SURGICAL CONGRESS, Tutwiler Hotel, Birmingham, Ala., March 8-11. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta, Ga., Secretary.

WESTERN SOCIETY OF ELECTRO-ENCEPHALOGRAPHY, Del Monte Lodge, Pebble Beach, Calif., March 7-8. Dr. Sylvester N. Berens, 902 Boren Ave., Seattle, Secretary.

FOREIGN AND INTERNATIONAL

ASSOCIATION OF SURGEONS OF GREAT BRITAIN AND IRELAND, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

BRITISH MEDICAL ASSOCIATION, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

CANADIAN MEDICAL ASSOCIATION, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ont., Canada, General Secretary.

CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE PREVENTION OF BLINDNESS, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

EUROPEAN SOCIETY OF CARDIOVASCULAR SURGERY, Edinburgh, Scotland, July 9-10, 1954. For information address: Mr. A. J. Slessor, Department of Surgery, University New Building, Edinburgh 8, Scotland.

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE, Scarborough, England, April 27-30, 1954. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Los Angeles, Calif., U. S. A., Oct. 4-7, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S.W., Rochester, Minn., U. S. A.

INTERNATIONAL CANCER CONGRESS, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 20-24, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Mo., U. S. A., Chairman, Committee on Arrangements.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Barcelona, Spain, Oct. 4-8, 1954. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Ill., U. S. A., Executive Secretary.

INTERNATIONAL CONGRESS ON GROUP PSYCHOTHERAPY, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

INTERNATIONAL CONGRESS ON GYNECOLOGY AND OBSTETRICS, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

INTERNATIONAL CONGRESS OF HEMATOLOGY, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6e, France, Secretary.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF HYDROCLIMATISM AND THALASSOTHERAPY, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni venac 1, Belgrade, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Buenos Aires, Argentine, April 21-28, 1954. Direcion General de Sanidad Militar, Pozos 2045, Buenos Aires, Argentine.

INTERNATIONAL CONGRESS OF NUTRITION, Amsterdam, Netherlands, Sept. 14-18, 1954. For information write: Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands.

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY, University of Montreal and McGill University, Montreal, Canada, Sept. 9-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF ORTHOPEDIC SURGERY AND TRAUMATOLOGY, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

INTERNATIONAL CONGRESS OF PSYCHOLOGY, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

INTERNATIONAL CONGRESS FOR PSYCHOTHERAPY, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

INTERNATIONAL CONGRESS OF THE SOCIEDAD DE MÉDICOS INTERNOS, Residentes y Becarios del Instituto Nacional de Cardiologia de Mexico, Acapulco, Mexico, April 21-24, 1954. For information address: Dr. Jorge Soberón Acevedo, Avenida, Cuauhtemoc No. 300, Mexico, D. F., Mexico.

INTERNATIONAL GERONTOLOGICAL CONGRESS, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

INTERNATIONAL INSTITUTE ON CHILD PSYCHIATRY, Toronto, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, N. Y., U. S. A., Executive Officer.

INTERNATIONAL POLIOMYELITIS CONGRESS, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

INTERNATIONAL SOCIETY OF ANGIOLOGY, North American Chapter, Hotel Mark Hopkins, San Francisco, Calif., U. S. A., June 19, 1954. Dr. Henry Haimovici, 105 East 90th St., New York, N. Y., U. S. A., Secretary.

INTERNATIONAL SOCIETY OF BLOOD TRANSFUSION, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12e, France.

INTERNATIONAL SOCIETY FOR CELL BIOLOGY, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

IRISH MEDICAL ASSOCIATION, Killarney, Ireland, July 7-10, 1954. Dr. P. J. Delaney, 10, Fitzwilliam Place, Dublin, Ireland, Medical Secretary.

JOURNEES MEDICALES, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

LATIN AMERICAN CONGRESS ON GYNECOLOGY AND OBSTETRICS, Sao Paulo, Brazil, July 10-15, 1954. Prof. Dr. Jairo Ramos, av. Brigaderio Luiz Antonio, 278-8° andar, Sao Paulo, Brazil, Chairman of Organizing Committee of Medical Congresses.

LATIN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Medellin, Columbia, South America, Feb. 15-20, 1954. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

PAN AMERICAN CONGRESS OF CHILD WELFARE AND PEDIATRICS, Sao Paulo, Brazil, July 15-21, 1954. For information address: Dr. Jairo Ramos, Avenida Brigaderio Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

PAN AMERICAN CONGRESS OF GASTROENTEROLOGY, Sao Paulo, Brazil, July 19-24, 1954. For information address: Dr. Jairo Ramos, Avenida Brigadeiro Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, São Paulo, Brazil, President.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Maximo Garcia Castañeda, Humboldt 17, Mexico 1, D.F., Mexico, Secretary-General.

PAN AMERICAN CONGRESS OF VETERINARY MEDICINE, Sao Paulo, Brazil, April 3-10, 1954. Dr. Joao Soares Veiga, Rua Pires da Mota 159, Sao Paulo, Brazil, Chairman of Organizing Committee.

PAN-PACIFIC SURGICAL CONGRESS, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

SECTIONAL MEETING, AMERICAN COLLEGE OF SURGEONS, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

SOUTH AMERICAN CONGRESS OF ANGIOLOGY, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

WORLD CONGRESS OF CARDIOLOGY, Washington, D. C., and Bethesda, Md., U. S. A., Sept. 12-17, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

WORLD FEDERATION OF OCCUPATIONAL THERAPISTS, Edinburgh, Scotland, August 17, 1954.

WORLD MEDICAL ASSOCIATION, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various Centers, July 16. Final date for filing applications in Jan. 16. Sec., Dr. Curtiss B. Hickox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, Sept. 2. *Oral.* Ann Arbor, Oct. 15-18. To be eligible candidates must have completed thirty-six months of training by October 1. Final date for filing application is May 1. Exec. Sec., Miss Janet Newkirk, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, April 1-3 (candidates in the midwest). Los Angeles, June 15-17 (candidates west of the Rocky Mountains and west coast). The closing date for acceptance of applications for Chicago and Los Angeles is Feb. 1. New York, Sept. 22-24 (candidates on the east coast). The closing date for acceptance of applications will be April 1. *Written.* Oct. 18. Final date for acceptance of applications will be May 1. *Subspecialties. Cardiovascular Disease.* Chicago, April 1. *Gastroenterology.* Chicago, April 2-3. The closing date for acceptance of applications for the subspecialties will be Jan. 15. Exec. Sec.-Treas., Dr. William A. Werrell, One West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June. Final date for filing application is Jan. 15. Sec., Dr. Leonard T. Furlow, 600 S. Kingshighway, St. Louis 10.

AMERICAN BOARD OF NEUROLOGY AND PSYCHIATRY: *Psychiatry and Neurology.* Chicago, April 29-30. Final date for filing application is Feb. 1. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination (Part I) and review of case histories for all candidates will be held in various cities of the United States, Canada, and military centers outside the continental United States on Feb. 5. Case abstracts to be sent by the candidate to the Secretary are now due. *Part II.* Chicago, May 10-17. Final date for filing application is April 1. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Practical examinations, 1954.* San Francisco, June 25-29; New York City, Dec. 5-9. Final date for filing applications was July 1, 1953. *Written, 1955.* Various cities, Jan. 24-25. Final date for filing application is July 1, 1954. *Practical examinations, 1955.* Philadelphia, June 10-15; Chicago, Oct. 9-14. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Boston, May 17-21. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: San Francisco, June 17-19. Sec., Dr. William B. Wartman, 303 E. Chicago Ave., Chicago 11.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Washington, D. C., Feb. 19-21; Des Moines, March 19-21; New York City, May 1-3; San Francisco, June 25-27; Chicago, Oct. 8-10 and New Haven, December.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Oral and Written.* Washington, D. C., Sept. 5-6. Final date for filing applications is March 31. Sec., Dr. Earl C. Elkins, 30 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: *Entire Examination.* Galveston, April 17-19. Final date for receipt of case reports was Jan. 1. Final date for receipt of case reports for the fall 1954 examination is June 1, 1954. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* Kansas City, Philadelphia and San Francisco, May 8. Sec., Dr. Louis A. Buie, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 13-14; New Orleans, Feb. 28-March 1, 1955; San Francisco, Mid-October, 1955; New York City, December, 1955. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minnesota.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Spring 1954. Final date for filing application was Dec. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral-clinical and pathology.* Chicago, Feb. 17-20. Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16.

BOARD OF THORACIC SURGERY: *Written.* Various centers throughout the country. Feb. 26. Final date for filing application is Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Street, Detroit, Mich.

DEATHS

McCants, John Marion ⊕ Captain, U. S. Navy, retired, Needham, Mass.; born in Smiths Turnout, S. C., May 9, 1892; University of Virginia Department of Medicine, Charlottesville, 1917; member of the Arkansas Medical Society; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; certified by the National Board of Medical Examiners; commissioned a lieutenant, junior grade, Medical Corps, U. S. N., July 19, 1917; promoted to lieutenant in 1920, lieutenant commander in 1925, to commander in 1936, and to captain in 1941; veteran of World Wars I and II; served on the U. S. ships Mercy, Nitro, Sapelo, Relief, and Arkansas, as district medical officer of the 10th naval district and as commanding officer of Naval Mobile Base Hospital No. 2 at the naval hospitals at Norfolk, Va., Pearl Harbor, T. H., League Island, Pa., Portsmouth, N. H., Chelsea, Mass., Newport, R. I., Mare Island, Calif., and Great Lakes, Ill.; attached to the Navy's Bureau of Medicine and Surgery for a short period in 1944; placed on the retired list of officers of the Navy by reason of physical disability on Jan. 1, 1947; died Dec. 8, aged 61, of diabetes mellitus with cardiac failure.

McHenry, Junius Hardin ⊕ New York City; born in Owensboro, Ky., April 22, 1876; Rush Medical College, Chicago, 1900; later took graduate work in Berlin, Vienna, Paris, and London; instructor in surgery at Western Reserve University School of Medicine in Cleveland from 1905 to 1914; colonel, medical reserve corps since 1924; served during World War I and was awarded the Victory Medal (three stars); fellow of the American College of Surgeons; member of the New York Academy of Medicine, Anglo-American Medical Association of Berlin and Vienna, Academy of Political Science, Horticultural Society, Association of Military Surgeons of United States, Military Order of World War, New York Society of Military and Naval Officers of World War, and Phi Rho Sigma; associate neurologic surgeon, Polyclinic Hospital, 1915-1917; visiting neurological surgeon at the Reconstruction Hospital, 1920-1928, serving as vice-president of the medical board, 1926-1928; surgeon at the Brooklyn-Manhattan Transit Corporation (now New York City Transit System) since 1926; died in East Norwalk, Conn., Dec. 4, aged 77, of cerebral hemorrhage.

Johnson, Scott ⊕ New York City; born in New Haven, Conn., March 18, 1898; Washington University School of Medicine, St. Louis, 1924; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; instructor in medicine at Cornell University Medical College; medical director of the Knickerbocker Hospital; medical director, secretary of the medical board, and attending physician at the Lincoln Hospital; member of the medical board of the Doctors Hospital; attending physician, Manhattan State Hospital; assistant attending physician, New York Hospital; died Dec. 14, aged 55, of coronary thrombosis.

Curphey, Wilfred Conklin ⊕ Stockton, Calif.; born in Abilene, Kan., April 27, 1905; University of Kansas School of Medicine, Kansas City, Kan., 1930; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; served during World War II; affiliated with San Joaquin General Hospital in French Camp, and St. Joseph's and Dameron hospitals; owner of the Curphy Clinic; at one time surgeon and superintendent of the New Mexico State Hospital in Las Vegas; died in the Peter Bent Brigham Hospital, Boston, Nov. 21, aged 48, of coronary disease.

Lamoureux, Stanislas Albert ⊕ New Bedford, Mass.; born in 1877; Tufts College Medical School, Boston, 1910; formerly a pharmacist; member of the Rhode Island Medical Society; formerly member of the city board of health; served as physician to the Board of Overseers of the Poor (now the Department of Public Welfare); practiced in Pawtucket, R. I., where he was on the staff of the Memorial Hospital; served on the staff of the Notre Dame Hospital in Central Falls, R. I.; affiliated with St. Luke's Hospital in New Bedford; died Nov. 17, aged 76, of uremia and arteriosclerosis.

Walker, Michael Muckleroy ⊕ Rocksprings, Texas; born in Sweet Home, Texas, Sept. 20, 1883; St. Louis College of Physicians and Surgeons, 1908; for two terms president and secretary of the Wichita County Medical Society; served during World War I; for many years city and county physician of Wichita Falls and Wichita County; chairman of the board of directors of Wichita General Hospital, Wichita Falls, from its opening until 1925, when he helped to found the Walker-Hargrave Hospital of that city, now Bethania Hospital; died recently, aged 70, of pneumonia.

Chandler, Thomas Jefferson, Betsy Layne, Ky.; Hospital College of Medicine, Louisville, 1906; died Nov. 20, aged 74.

Coleman, William Orange, Assumption, Ill.; Kansas City (Mo.) Hahnemann Medical College, 1903; died in the Decatur and Macon County Hospital, Decatur, Ill., Dec. 5, aged 81, of coronary heart disease.

Collins, James Daniel ⊕ Detroit; Western University Faculty of Medicine, London, Ontario, Canada, 1910; on the staff of Grace Hospital; died Nov. 16, aged 66, of coronary occlusion.

Cottlow, Benjamin Augustus, Oregon, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1892; died Dec. 15, aged 82, of heart disease.

Cummings, Robert Earl, Winter Park, Fla.; Loyola University School of Medicine, Chicago, 1924; specialist certified by the American Board of Pediatrics; fellow of the American Academy of Pediatrics; formerly on the faculty of his alma mater; affiliated with Little Company of Mary in Evergreen Park, Ill., and Mercy and St. Bernard's hospitals in Chicago; died Dec. 13, aged 55, of cerebral hemorrhage, hypertension, and generalized arteriosclerosis.

Cunningham, George Smith ⊕ McDonald, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; spent many years in the Philippines as a medical missionary; served during World War I; on the staff of the Canonsburg (Pa.) General Hospital; died Nov. 28, aged 70, of multiple myeloma and compression fracture of the vertebrae.

Edenfield, Jesse Ryerson Jr., ⊕ Graniteville, S. C.; Medical College of the State of South Carolina, Charleston, 1943; served during World War II; on the staff of the Aiken County Hospital in Aiken; died Nov. 24, aged 34.

Elder, Fred Orestes ⊕ Marblehead, Mass.; Jefferson Medical College of Philadelphia, 1905; died in the Mary A. Alley Emergency Hospital Nov. 30, aged 74, of cancer.

Gibbs, Allen Gilbert ⊕ Oklahoma City, Okla.; born in Lake Mary, Miss., Feb. 16, 1909; University of Oklahoma School of Medicine, Oklahoma City, 1932; one of the founders and president of the Oklahoma Academy of General Practice, of which he was the first secretary for four years; served one term as vice-president of the Oklahoma State Medical Association; during World War II, lieutenant colonel with Oklahoma's 21st Evacuation Hospital, with which he saw three years' service in the South Pacific theater; died Nov. 27, aged 44.

Hendry, Wayland Marion Jr., ⊕ Atlanta; born in Washington, Ga., Nov. 1, 1916; Medical College of Georgia, Augusta, 1943; interned at the Macon Hospital in Macon, Ga.; a resident at the Georgia Baptist Hospital; during World War II served for three years as a battalion surgeon with the 44th Infantry Division in Europe; member of the staffs of the Georgia Baptist and Crawford W. Long hospitals; died in the University Hospital Nov. 16, aged 37, of lymphatic leukemia.

⊕ Indicates Member of the American Medical Association.

Herr, John Trout ✠ Landisville, Pa.; University of Maryland School of Medicine, Baltimore, 1910; past president of the Lancaster County Medical Society; served on the staffs of the Children's Hospital in Philadelphia and St. Joseph's Hospital in Lancaster; died Oct. 11, aged 67, of arteriosclerotic heart disease.

Lange, Anthony Henry ✠ Detroit; University of Michigan Medical School, Ann Arbor, 1916; served during World War I; affiliated with Deaconess Hospital; for many years chairman of the Wayne County Insurance Commission; died in Miami Beach, Fla., Dec. 1, aged 61, of pulmonary edema.

Langworthy, Howard Tracy ✠ West Edmeston, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1911; specialist certified by the American Board of Urology; member of the American Urological Association; fellow of the American College of Surgeons; affiliated with Methodist and Cumberland hospitals in Brooklyn; died Nov. 30, aged 68, of coronary thrombosis.

Levenberg, Bernard, Cleveland; Medical College of Alabama, Mobile, 1896; died Nov. 2, aged 82, of arteriosclerosis.

Lively, Charles O., Ralston, Okla.; Kentucky School of Medicine, Louisville, 1892; died in Pawnee Nov. 24, aged 84.

Loewenthal, Richard ✠ New York City; Georg August-Universität Medizinische Fakultät, Göttingen, Germany, 1920; died Nov. 25, aged 61, of coronary thrombosis.

Lucas, William B., ✠ Mendon, Mo.; St. Louis Medical College, 1879; on the staff of St. Francis Hospital in Marceline, Mo., where he died Dec. 14, aged 97, of uremia.

Ludlum, Walter Denton ✠ St. Albans, N. Y.; University of the City of New York Medical Department, New York, 1898; an Associate Fellow of the American Medical Association; member of the American Academy of Pediatrics; specialist certified by the American Board of Pediatrics; past president of the Kings County Medical Society; consultant in pediatrics, Methodist Hospital, where he died Dec. 10, aged 78, of acute myocardial infarction.

McAllister, Robert Lewis ✠ Marysville, Kan.; Central Medical College of St. Joseph, Mo., 1898; county health officer; died in November, aged 80, of coronary occlusion.

MacDonell, George Nowlan ✠ Miami, Fla.; Atlanta College of Physicians and Surgeons, 1905; veteran of the Spanish American War; past president of the Florida Public Health Association; formerly health officer; died in the Jacksonville Memorial Hospital Dec. 8, aged 80, of myocardial degeneration with decompensation.

McDougall, Bernard William, Detroit; Western University Faculty of Medicine, London, Ontario, Canada, 1920; affiliated with Providence Hospital; died in St. Mary's Hospital in London, Ontario, Canada, Dec. 4, aged 60, of carcinoma.

McFadden, Robert Norman, Bakersfield, Calif.; Creighton University School of Medicine, Omaha, 1945; served on the staff of the Kern General Hospital; died in the Hospital of the Good Samaritan in Los Angeles, Nov. 26, aged 33.

Mann, Horace J., ✠ Brockport, N. Y.; University of Buffalo School of Medicine, 1888; affiliated with Lakeside Memorial Hospital; died Dec. 16, aged 87, of arteriosclerosis and nephritis.

Manthei, Wyllys Anton ✠ Lake Linden, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; fellow of the American College of Surgeons; for many years member of the school board; past president of the Houghton-Baraga-Keweenaw County Medical Society and the Upper Peninsula Medical Society; affiliated with St. Joseph's Hospital in Hancock, Calumet Memorial Hospital in Laurium, and Calumet and Hecla Hospital in Calumet; died Dec. 4, aged 63, of heart failure.

Meanwell, Walter Ernest ✠ Madison, Wis.; Baltimore Medical College, 1909; formerly basketball coach at the University of Wisconsin, where he was later athletic director; received his Ph.D. from the University of Wisconsin in 1915; died Dec. 3, aged 69, of coronary heart disease.

Moore, Rufus Dillard Jr., ✠ Houston, Texas; University of Arkansas School of Medicine, Little Rock, 1935; served during World War II; died Nov. 30, aged 43.

Morey, Oris L., St. Louis; Physio-Medical College of Indiana, Indianapolis, 1894; for many years a medical missionary; died in the City Hospital Dec. 9, aged 83, of pneumonia.

Mowry, William P., Detroit; the Hahnemann Medical College and Hospital, Chicago, 1904; formerly postmaster in Bronson, Mich.; died in the Sinai Hospital Dec. 10, aged 70, of acute coronary occlusion.

Murray, Lotis Velmer, Pleasant Hill, Mo.; Northwestern University Medical School, Chicago, 1930; county coroner; died in St. Luke's Hospital, Kansas City, Mo., Nov. 23, aged 48, of cirrhosis of the liver.

Nezworski, Henry Thomas ✠ Ironwood, Mich.; Marquette University School of Medicine, Milwaukee, 1934; past president of the Gogebic County Medical Society; affiliated with Grand View Hospital; died near Rockland Township Dec. 2, aged 44, of injuries received in an automobile accident.

Pound, John Charles ✠ Baltimore; Baltimore Medical College, 1896; fellow of the American College of Surgeons; affiliated with Bon Secours and St. Agnes hospitals; consulting rhinolaryngologist, Allegany Hospital of the Sisters of Charity, Cumberland, Md.; died Nov. 27, aged 89, of arteriosclerotic cardiovascular disease.

Prowdley, William Paul, Cleveland; Michigan College of Medicine and Surgery, Detroit, 1899; died in the Fairview Park Hospital Oct. 25, aged 76, of coronary artery sclerosis.

Purks, Paul Edwin ✠ Nashville, Tenn.; Emory University School of Medicine, Atlanta, Ga., 1922; member of the American Academy of General Practice; affiliated with Nashville General Hospital and Mid-State Baptist Hospital, where he died Dec. 2, aged 55, of acute bronchitis and emphysema.

Ridings, Alfred Lafayette ✠ Washington, D. C.; University of Louisville (Ky.) Medical Department, 1910; past vice-president of the State Medical Association of Texas; fellow of the American College of Surgeons; past president of the Texas Railway and Traumatic Surgical Association; served during World War I; for many years practiced in Sherman, Texas, where he was on the staff of the Wilson N. Jones Hospital; died Dec. 16, aged 74, of congestive heart failure.

Riebel, John Alan II ✠ Kingsville, Texas; Ohio State University College of Medicine, Columbus, 1934; served during World War II; died Sept. 12, aged 46.

Rose, William B., LaFollette, Tenn.; Louisville (Ky.) Medical College, 1885; died Nov. 15, aged 96.

Runyan, John Richard, Newport, Ark.; Missouri Medical College, St. Louis, 1897; formerly health officer of White County; died in Newport Hospital Nov. 27, aged 86, of arteriosclerosis.

Scott, J. Milton ✠ Scio, Ohio; University of Pittsburgh School of Medicine, 1910; died Dec. 2, aged 72, of coronary heart disease.

Shanklin, Benjamin ✠ St. Louis; Marion-Sims College of Medicine, St. Louis, 1892; fellow of the American College of Surgeons; affiliated with Incarnate Word Hospital and St. John's Hospital; died Dec. 3, aged 86, of coronary thrombosis.

Sieve, Benjamin Frank ✠ Boston; Tufts College Medical School, Boston, 1928; served as instructor in medicine at his alma mater; member of the Endocrine Society; affiliated with Boston City and Beth Israel hospitals; died recently, aged 50.

Simkins, Daniel, Philadelphia; Jefferson Medical College of Philadelphia, 1906; died in the Einstein Medical Center Nov. 16, aged 73.

Sterbcow, Marx David ✠ New Orleans; Louisiana State University Medical Center, New Orleans, 1934; died Dec. 22, aged 43.

Wallerstein, Lazar ✠ New York City; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1921; on the staff of Sydenham Hospital; died Oct. 17, aged 63.

FOREIGN LETTERS

DENMARK

Treatment of Hyperthyroidism.—Hitherto no comprehensive statistical study has been undertaken in Denmark to ascertain the comparative value of the operative and medical treatment for hyperthyroidism. At a meeting of the Danish Society for Internal Medicine on Nov. 27, 1953, Dr. J. Piper and Dr. J. Rosen presented such a study. Their survey of seven Danish articles giving primary operative results concerned 2,849 patients with an operative mortality rate of 1.5%. Among these seven articles was one by Bertelsen and his associates whose operative mortality covering the period of 1940-1945 was only 0.7%. On the medical side were four articles dealing with 558 patients treated over a prolonged period with antithyroid preparations. In this material, the deaths resulting from the complications or side-effects of medical treatment gave a mortality rate of 0.4%. It would be an oversimplification of the problem to attempt to assess the comparative merits of the two treatments on the basis of these two rates. While in some cases the indications for one or the other of the two treatments are clear, there remains a third group, the largest, in which the choice must be free. It is essential to remember that, if medical treatment fails, operative treatment can be tried, whereas the latter is of a much more irrevocable character.

In *Ugeskrift for Laeger* for Dec. 3, 1953, in which the study by Drs. Piper and Rosen was published, an editorial points out that the choice of treatment can now be narrowed down to an operation or treatment with antithyroid preparations, because roentgenotherapy is reduced to an auxiliary role in specially difficult cases, and the indications for giving radioactive iodine are very limited. Ordinary iodine, on the other hand, may be useful in preparing a patient for operation and under other special conditions. Children and patients over 60 are poor subjects for operation, and repetition of an operation is to be discouraged for fear of tetany and damage to the nerve supply. The varying quality of the operative results in different hospitals shows the importance of concentrating candidates for thyroidectomy in special hospitals that provide every opportunity for the modern and highly technical operative treatment of hyperthyroidism.

Hydrocortisone by Intra-Articular Injection.—Two articles in *Ugeskrift for Laeger* for Nov. 26, 1953, give encouraging accounts of various forms of articular rheumatism treated by different cortisone preparations. At the Frederiksberg Hospital, Dr. Erik Henriksen and Dr. Leif Nyfos treated 14 persons with chronic polyarthritis and 11 with osteoarthrosis with intra-articular injections of 25 mg. of hydrocortisone. A few patients with periarthrosis humeri and gouty arthritis were treated in the same way. Excellent results were obtained in most patients, particularly those with chronic polyarthritis in whom the improvement was most constant and of one to four weeks' duration. The response of the arthroses was also good and of about the same duration. Patients in whom treatment with gold, x-rays, and physiotherapy gave disappointing results were elated by the promptness with which these injections gave relief. The action of the drug being local, none of the systemic side-effects of cortisone were observed in any of these patients. None of the injected joints became infected, and in no case was there any exacerbation of the disease. On the other hand, no permanently curative effect is claimed for this treatment. It remains to be seen whether repeated injections can ensure permanent improvement. Meanwhile, well-established methods of treatment should not be discarded in favor of these injections. The promptness with which they relieve pain increases the possibility of "movement-therapy" being instituted earlier than usual.

In the second article, Dr. Erik Andersson and Dr. Knud B. Petersen report on the use of hydrocortisone (Hydrocortone) in eight patients with arthrosis of the knees and two patients with arthrosis of the hips. The hydrocortisone (25 mg.) was injected into the joints with the patients under local procaine anesthesia and, in most cases, after a little intra-articular fluid had been aspirated. Marked improvement with a remission of symptoms lasting 7 to 21 days was effected in eight of these patients. Only two of them obtained no relief from pain. No patient had any disagreeable side-effects, and there should be little risk of infection of the joints injected, if conscientious attention is paid to the technique. As this report is only preliminary, its authors stress the need for further experience with injections repeated after longer or shorter intervals. Only then can opinions be expressed with regard to the duration of remissions.

Streptomycin or Dihydrostreptomycin?—At a meeting of the Danish Otolaryngological Society and in the medical press, the comparative merits of streptomycin and dihydrostreptomycin in the treatment of tuberculosis in general and tuberculous meningitis in particular have been widely discussed. Based on a report of 60 patients with meningitis, the staff of the Blegdam Hospital concluded that dihydrostreptomycin should be discarded in favor of streptomycin when treatment is to be prolonged. Although the latter may entail a risk of loss of vestibular function, it is less likely to interfere with acoustic function than dihydrostreptomycin. Loss of vestibular function, with hearing retained, is less serious than deafness combined with more or less interference with vestibular function. A report from the Odense City Hospital on 16 patients with tuberculous meningitis does not present so clear a case against dihydrostreptomycin, but it seems that, since the introduction of isoniazid, it is now possible to reduce the dosage of streptomycin and thus almost completely avoid complications due to it. From the tuberculosis department of the Aarhus City Hospital comes a report on 188 patients with pulmonary tuberculosis who were given streptomycin or dihydrostreptomycin or both. Protracted dihydrostreptomycin treatment, with or without *p*-aminosalicylic acid (PAS), entailed insignificant vestibular disturbances, but a risk of deafness in some was serious and presumably irreparable. Such deafness sometimes developed after the treatment was discontinued, hence the advice to give up dihydrostreptomycin and to return to streptomycin that, with the lower doses now favored, should cause no serious complications.

Other reports on the comparative merits of the two drugs, although not so emphatically condemnatory of dihydrostreptomycin, do not overlook its potential capacity for causing deafness. Drs. O. Metz and Kjaer state that in a series of 780 patients with pulmonary tuberculosis treated with dihydrostreptomycin, 20 complained of deafness that was, however, not serious enough to warrant the discontinuance of this drug. This agent should be withheld when hearing is already defective or if acute hearing is of special importance to the patient. In *Nordisk Medicin* for Oct. 22, 1953, there is a series of articles on the subject covering recent experiences in Sweden, Norway, and Denmark and showing that the benefits of the streptomycins in tuberculous meningitis are now being enhanced by a more cautious dosage and by combined treatment with *p*-aminosalicylic acid and isoniazid and, in Sweden, with penicillin. Individual idiosyncrasy is still a problem; for example, there is the observation that in one Danish patient only 28 gm. of dihydrostreptomycin led to slight deafness, whereas in another a total dose of 262 gm. had no such effect.

Health of Greenland.—A public health report on Greenland for 1951, the first of its kind to be published, is a result of the public health law of May 27, 1950. In 1951, the native population of the country was 22,866. Most of the population lived in western Greenland; there were only 1,534 inhabitants

The items in these letters are contributed by regular correspondents in the various foreign countries.

in eastern Greenland and 367 in northern Greenland. The birth rate in 1951 was 42 per 1,000, and the death rate was 26 per 1,000—a rate triple that of Denmark. With the high birth rate, Greenland's population is growing faster than that of Denmark; on the other hand the stillbirth rate was 2.5 times higher and the infant death rate 4.5 times higher in Greenland than in Denmark. The causes of death in Greenland differ from those in Denmark. Among the 480 deaths in Greenland in 1951, there were 173 from tuberculosis. Bronchopneumonia accounted for 10% of the deaths, and another 10% were due to measles. In marked contrast to these figures are the deaths from heart disease and cancer each of which accounted for only 3% of the deaths. Concerning sickness rates, there were 800 new cases of gonorrhea in 1951. Much has been done to combat it, and during the winter months it becomes a comparatively rare disease, only to flare up again in the summer when traffic at sea is more lively. The measures now being taken against two of the most fatal diseases in Greenland, tuberculosis and measles, reflect conditions that in certain respects are peculiar to this country and that present rare opportunities for exploring the benefits of various new public health measures.

ITALY

Italian Society of Pathology.—The third international convention of the Italian Society of Pathology was held in Siena, March 26-28, 1953. Professor Cesaris-Demel, director of the University of Siena Institute of Pathologic Anatomy, was the chairman.

Professor Peyronel called attention to the need for a parallel approach in studies of plant and animal pathology. The two fields are separated, he said, more in appearance than in reality, because protoplasm gives them a common basis and distinguishes them from inorganic things. Their sources of energy are identical, and the chemical processes in general are closely parallel. Even the pronounced diversities, which sometimes seem to create an abyss between the two fields, are found, after a more accurate investigation, to be characterized by a similar cellular chemistry. Professor Peyronel discussed diseases due to avitaminosis in plants and human beings and concluded that investigation of the oligodynamic substances in comparative pathology is a promising field.

Professor Ciaranfi, director, University of Perugia Institute of General Pathology, discussed the pathogenesis and functional significance of the regressive processes of the cell. He concluded that histocytological data alone are no longer satisfactory and that a biochemical integration is necessary. The integration of morphology and chemistry opens a new road for the investigation of cellular reactivity. Professor Ciaranfi reviewed various regressive cellular processes including cloudy swelling, vacuolar degeneration, and steatosis. The alterations of the mitochondria that were constant in this cellular metamorphosis were important in the studies of cloudy swelling.

Professors Gullino and Mottura reported on the reactive manifestations of the lymphatic organs and especially of the lymph nodes. They reviewed the concept of reaction of the lymphoreticular connections and gave a general view of the morphology of the lymph nodes and the various modes of histiocytic, lymphocytic, and plasmocytic reactivity and the relationship of these to the formation of antibodies. They discussed the latest views on the lymphocytopoietic function, the participation of the lymph nodes in intermediate metabolism, their diffuse and nodular reactive hyperplasia, the hyperplasias of lymph nodes in experimental allergy, and the forms of lymphoreticular hyperplasia.

Professor Romano Severi reported on the pathogenesis of gastroduodenal ulcers. He showed motion pictures of the work he and his associates, Professors Bonomi and Ferro, were doing to investigate the possible microbic pathogenesis of gastroduodenal ulcers. His report was based on the results they obtained and the analogy between these ulcers and those of the skin, mouth, and colon in which streptococci, and especially Streptococcus viridans, play an important role. Their studies showed the same type of streptococci in the stomach and duodenum as in the mouth. The presence of these organisms in and about the ulcers of the stomach and duodenum was proved with a "histomicrobic" demonstration. The germs attack mainly the free margins of the covering epithelium and are always found adhering to heterotopic cells of the gastric type in the duodenum. This relationship of continuity precedes the ulcerous phase. The infiltrated mucosa often shows neutrophilic granulocytes and evident degenerative phenomena of the epithelium to the point of a more or less deep erosion of the epithelium itself. An analogous phenomenon could also result from the action of the gastric juice or from other factors that exert their action on the epithelium that has been devitalized by the adhering germs. Professor Severi's theory rests on (1) a constant and peculiar gastroduodenal ulcer-producing power of streptococci, (2) a local implantation of the germs with erosion of the mucosa, and (3) a microbic infiltration of the mucosa before the ulceration occurs. The fact that the process becomes chronic may be ascribed to the prevailing microbic infiltration of the ulcerous margins that thus are unable to proliferate.

LONDON

Government Committee Report on Smog.—The government appointed a "committee on air pollution" in July, 1953, to "examine the nature, causes, and effects of air pollution and the efficacy of present preventive measures; to consider what further preventive measures are practicable; and to make recommendations." This committee has published an interim report (London, Her Majesty's Stationery Office) that defines smog as "a combination of natural fog and solid and gaseous polluting substances." It is estimated that over the country as a whole less than half the smoke is derived from domestic chimneys but in the London smog of 1952 up to 60% of the smoke was due to domestic fires. "It follows that a first, immediate and stubborn obstacle to the reduction of smoke is the preference of the majority of people for traditional methods of heating. The need for education and training in these matters is urgent and vital. . . . With few, if any, exceptions, no industrial chimney need emit more than a light haze of smoke if the combustion arrangements are adequate and are properly operated." Most (about 12 million) domestic space-heating grates are of old-fashioned design, made for the specific purpose of burning coal. Most smokeless fuels, other than low temperature coke, cannot be burned satisfactorily in them. "It is a major problem to replace the millions of these inadequate grates now in use by grates of suitable design." In addition, there is "nothing like enough smokeless fuel in the country for this purpose either now or in sight within the next few years."

The following recommendations are made for immediate action. Arrangements should be made for the Meteorological Office to issue warnings for areas of normally high pollution in which serious fog is expected to be present for at least 24 hours. Every effort should be made to provide adequate supplies of smokeless fuel to domestic consumers in London and other densely populated areas subject to bad fog and to encourage householders to lay in a supply so that they can use it during such periods. Smoke control measures in industry and offices should be brought up to peak efficiency at the beginning of the winter, and special efforts should be made to prevent heavy smoke emission during stoking. Householders are urged to use smokeless fuel, especially during periods of persistent fog. A mixture of coke and coal will burn reasonably well and will greatly reduce smoke. To reduce smoke, fires should not be banked at night and rubbish should not be burned. The general public is also requested not to bring automobiles into densely populated centers during a serious fog warning. Attention is drawn to the fact that less smog will find its way indoors, and rooms will be kept warmer, if drafts are prevented. If fog is very thick, elderly persons and those suffering from chronic chest and heart conditions are advised to remain indoors and to rest as much as possible. "Those who must go out will find that a closely fitting simple gauze mask, or a woollen scarf wrapped round the mouth and nose, will give some relief, by filtering out some at least of the solid contents of 'smog'."

Under normal conditions in any large town in winter the concentration of carbonaceous particles that constitute smoke at or near ground level may amount to 1 oz. per million cubic feet, and the concentration of sulfur dioxide may be 17 to 35 parts per 100 million volumes of air. In the London smog of December, 1952, the corresponding figures were 4½ oz. per million cubic feet and 134 parts per 100 million volumes of air. The inland consumption of solid fuel in Great Britain in 1952 was 204.7 million tons of coal, of which 53.1 million tons were carbonized to produce coke, tar, gas, motor spirit, fertilizers, and raw materials for chemicals. The remainder was burned directly. In addition, during 1952, 4.5 million tons of fuel and gas diesel oils and 0.6 million tons of creosote-pitch mixtures were burned; 2 million tons of oil were consumed by diesel engines, and 5.3 million tons of motor spirit were used in road transport. The estimated production of pollutants from all this in million tons is as follows:

Smoke	2.1
Grit	0.6
Sulfur dioxide	5.3
Other acids (nitric, hydrochloric)	0.3
Carbon monoxide	24.0

The London smog persisted for five days (Dec. 5 to 9, 1952). The number of deaths over and above those normally expected in the first three weeks of December indicated that about 4,000 persons died as a result of the smog. Deaths from bronchitis increased by about nine times during the week ending Dec. 13 and for pneumonia by nearly four times. This is a higher mortality than in any other London fog.

The amount of illness was also increased, as shown by the demands for hospital admission. The admissions for respiratory disease were nearly quadrupled and those for heart disease were trebled. The committee stated that they were "not in a position . . . to identify with any certainty the pollutants and the combination thereof which were responsible for the particularly harmful nature of the London 'smog' of December, 1952. There [was] however, a clear correlation between the pollution by smoke and sulphur dioxide, and the daily death rate in Greater London at that time." There was also a continuous abnormal death rate in Greater London during the two and one-half months following the smog. It is estimated that the economic loss by the nation as the result of air pollution is about 125 million pounds (350 million dollars) per annum.

"The problem of prevention is one of practicability and economics, and of the education of the whole community. Complete cure of both solid and gaseous pollution, if indeed it be ever attainable, is bound to take many years, but means of averting at least the worst evils of air pollution by smoke and grit are within . . . reach. It is simply a question of balancing the cost and inconvenience of enforcing a more efficient and scientific use of our fuels against all the advantages to be obtained in health, convenience, and economy from a clean atmosphere." Attention is drawn to the fact that, except for the "smokeless zone" provisions in local acts, the laws in force for the control of pollution of the air are aimed at pollution from industrial and not domestic sources. The preventive measures include: (1) conversion of bituminous coal into coke, gas, and electricity; (2) use of smokeless fuels for domestic purposes in place of bituminous coal; (3) replacement of old-fashioned domestic grates by improved appliances in which smokeless solid fuels, and if necessary bituminous coal, can be burned with appreciably greater efficiency; (4) extension, where economical, of central or district heating, whereby blocks or groups of buildings are heated from a single smokelessly fired boiler; (5) promotion of greater fuel efficiency in industry, both by more competent use of existing equipment and by the modernization of present equipment or the installation of new equipment where it is needed; (6) use of an efficient grit-arresting plant for furnaces fired by pulverized fuel or operated by forced draught; (7) cleaning of coal at the coal fields in order to remove shale and some of the sulfur compounds; and (8) research and development work on practicable methods of removing sulfur dioxide from the flue gases of power stations and other large boiler plants.

Seventeen local authorities in Great Britain have obtained special powers for the purpose of preventing smog but only two (Coventry and Manchester) have put statutory smokeless zones into operation. "The principle of smokeless zones has naturally attracted much attention and is widely regarded as a simple and easy solution of the 'smog' problem. Its rapid extention in this country is, however, subject to practical limitations. To have any material effect the zones must be large; if they are small they will not in fact be 'smokeless' since they will receive smoke from surrounding areas. The prohibition of smoke in an area presupposes that all the fuel that is burnt, whether in industrial or domestic premises, can be burnt without smoke, that is to say that every building will be equipped with the right kinds of appliances and that sufficient smokeless fuels will be available. While supplies of the latter are limited, their allocation only to smokeless zones would be at the expense of other areas. This suggests that any extension of smokeless zones, if they are to have the best results, should be carefully planned according to the needs of different areas. A smokeless zone may be achieved with less difficulty in an area of new development, but in the case of existing property it is likely to entail extensive conversions of plant and equipment and a radical change in traditional methods of heating. The establishment of smokeless zones must, under present conditions, involve increased expenditure and restrictions on the use of fuels whether in regard to industrial or domestic fires."

Another Linear Accelerator.—A few weeks ago the first linear accelerator (with an 8-million-volt potential) to be built specially for medical purposes was installed at Hammersmith Hospital. Now St. Bartholomew's Hospital is to have a 15-million-volt linear accelerator, the most powerful apparatus of its kind in existence for radiotherapy. A similar machine is being built at Hanwell for physical research. The accelerator at St. Bartholomew's Hospital produces penetrating rays by the bombardment of platinium foil by electrons. The 15-million-volt potential developed (the potential of the cobalt bomb is only 1,300,000 volts) means increased penetrating power, and it is hoped that the apparatus will be of value in the treatment of deep-seated tumors. This latest installation will allow St. Bartholomew's Hospital to regain a position it has maintained for many years in this country in the field of high-voltage therapy. In 1937, it installed a million volt deep x-ray unit, at that time the largest of its kind in the world.

Radioactivity of Tobacco.—In a letter to *Lancet* (2:1259 [Dec. 12] 1953) Prof. F. W. Spiers and Prof. R. D. Passey, of the departments of medical physics and experimental pathology and cancer research in the University of Leeds reported that "such radioactivity as is present in cigarette tobacco remains in the ash, and that very little, if any, is transferred to the smoke." Their experiments suggest that the maximum dosage of radioactivity that could be delivered to the lungs would be of the order of 2 or 3 mr a week, or about the dosage that body tissues receive continually from their average potassium content, local gamma rays, and cosmic rays. When tumors have been shown to be due to radioactive materials lodged in the body, the dosages involved were at least 10,000 times greater than these levels.

College of General Practitioners.—Since its foundation in November, 1952, the College of General Practitioners has done notable work in undergraduate and postgraduate education for general practitioners and research in general practice. Its first annual report is published as a supplement to the December issue of the *Practitioner*. Its membership exceeds 2,500, and regional facilities have been set up throughout the country. A report has been published on undergraduate education, based on a survey of the present meager facilities in most of the medical schools, and a course of lectures on general practice for senior medical students and junior graduates has been organized. A research register has been established, and a research newsletter has been published. Plans are complete for an investigation into the value of antibiotics and sulfonamides in the prevention of the complications of measles, and an ambitious scheme for a nation-wide survey of morbidity in gen-

eral practice is being planned in association with the General Register Office. An interesting project is an "epidemic observation scheme," which is being planned with the Public Health Laboratory Service to observe and, if possible, differentiate, the occurrence, pattern, and distribution throughout the country of minor illnesses of epidemic type, e. g., some of the pyrexias of unknown origin that are not receiving the attention they deserve. The first annual general meeting of the college was held in London on Nov. 14, and was attended by more than 400 members and associates from all over the United Kingdom and Eire. Dr. William Pickles was unanimously elected as first president.

MEXICO

Mexico's Trial with BCG.—Mexican experience with BCG given by mouth began in February, 1949, when BCG vaccination of newborn infants was used here for the first time. The results obtained up to this year are reported in the official Bulletin of the National Campaign Against Tuberculosis (May, 1953). The International Campaign Against Tuberculosis sponsored a short-term mass vaccination program that was carried out from July to October, 1950. The vaccine used was specially prepared by Mexico's BCG laboratories with a strain obtained from the Pasteur Institute in Paris. Before undertaking the mass vaccination program, a control study was made to test the strength of the Mexican-made vaccine, as compared with that prepared for the International Campaign Against Tuberculosis by laboratories in Copenhagen, to test the sensitivity of Mexican people to tuberculin, and to determine the amount of vaccine that should be given in a single dose. The control studies were carried on simultaneously in Mexico City and in Copenhagen. They proved the Mexican vaccine to have practically the same quality and potency as that made in Copenhagen.

In Mexico two techniques were used. 1. Newborn infants and children under one year of age were given three doses of 30 mg. (each) of BCG by mouth, on alternate days, during their first 10 days of life. 2. Children more than one year old were given 0.025 mg. of BCG diluted to 0.1 cc. intradermally near the site of insertion of the left deltoid muscle. Oral vaccination was used in children less than one year old, because experience has shown it to cause only minimal reactions. This has gained acceptance of the procedure specially in areas with a low cultural level. It is easily accomplished, and no elaborate equipment is needed. The experience in Rio de Janeiro reported by Arlindo de Assis was useful in determining the dosage to be used. Only normal full-term children were vaccinated. No tuberculin test was made on them prior to vaccination, and vaccination was made only with the parents' consent. A personal and familial record was made for every child and filed in the archives of the BCG institute.

The intradermal route was used in children more than one year old, because world-wide experience has shown that it stimulates a tuberculin-positive reaction in 98% of those so vaccinated, that antibodies are demonstrable up to seven years in 92% of cases, and that undesirable reactions are rare. The Mantoux test was made one month prior to vaccination in all children in this group.

Mothers were asked to bring their vaccinated children and other relatives in 1, 2, 6, 12, and 18 months after vaccination and whenever they became sick, at which time their weight, height, clinical status, and tuberculin reactions were recorded and a radiological examination was made. Other laboratory examinations were made as indicated. From Feb. 18, 1949, to June 1, 1950, about 29,940 newborn infants were given BCG by mouth. From April 1, 1949, to Oct. 30, 1950, about 15,340 children over one year of age and young men, were given BCG intradermally. From June to October, 1950, Mantoux tests were performed on 183,259 persons, 85,901 of whom were vaccinated with BCG, including those who were vaccinated during the control period prior to mass vaccination.

An index widely accepted to show the efficiency of the vaccine is the percentage of vaccinated persons in whom a positive tuberculin reaction develops after vaccination. Positive Mantoux reactions developed in 97% of those who were given the vaccine, either by mouth or intradermally. A 1+ reaction (5 to 10 mm.) was seen in 82%, and a 2+ reaction (11 to 20 mm.) in 18%. No vesicles, enlarged lymph nodes, or general reactions were observed after postvaccination tuberculin tests.

A comparative radiographic study was made of 440 persons more than one year of age vaccinated intradermally and of 2,313 others of the same age who were not vaccinated. Follow-up studies were made 2 to 18 months after vaccination. Pathological shadows were seen in 0.7% of the films of the first group and in 2.8% of those of the second group. On 1,489 infants given the vaccine by mouth and reexamined at the BCG clinic 2 to 18 months later, 21 had abnormal radiographic signs but no symptoms, and their height and weight were normal. Clinical and radiographic studies were made of 10 of them 6 to 12 months later, and no abnormal signs were found. It was the consensus that the shadows observed on the first examination corresponded to tracheobronchial lymph gland enlargements, which had no effect on the children's health. Van den Berg, Kostic-Yoksic (1949), and others believed that this hilar reaction is but one of the several lymph gland changes that take place after oral vaccination with BCG and that it is not a severe complication.

Two to 18 months after vaccination a complete medical examination was made at the BCG clinic of 1,906 infants, 1,439 of whom had been vaccinated by mouth when they were born and the rest of whom had not been vaccinated but were relatives of those vaccinated. No tuberculosis was found among those vaccinated, but it was found in 4.6% of those not vaccinated. Diseases other than tuberculosis had been present in 15.4% of the vaccinated children and in 34.8% of those not vaccinated. In the same clinic a medical examination was made of 866 children, 1 to 12 years of age; 449 had been vaccinated and 417 had not. No tuberculosis was found among those in the first group, but it was found in 4.5% of those in the second group. Of those in the first group 7.2% and of those in the second group 34.8% had had diseases other than tuberculosis. Medical examination of 1,658 persons over 12 years of age, 232 of whom had been vaccinated intradermally and 1,426 of whom had not been vaccinated but were relatives of those in the first group, were made. No tuberculosis was found among those in the first group, but it was found in 1.4% of those in the second group. In the first group 14.6% and in the second group 13.7% had had diseases other than tuberculosis. The weight curves for the first 18 months of life of 3,293 babies who had been vaccinated with BCG shortly after birth were found to be similar to those of normal children of same age who were not vaccinated. This indicated that vaccination by mouth with 90 mg. of BCG does not interfere with the normal physical development of infants.

Conference on Health Education.—On Sept. 18, 1953, at the Social Security Department auditorium, Dr. Ignacio Morones Prieto, Secretary of Public Health and Assistance, opened the Regional Conference on Hygienic Education. This meeting was prepared and sponsored by the World Health Organization. Representatives were present from most of the Central American and Caribbean countries. At the inaugural session Dr. Carlos Luis Gonzalez, chief of the division of public health of the Panamerican Sanitary Bureau, emphasized the interest of all the governments, which are members of that organization, in health education as an important part of general education. Dr. Manuel Pesqueira, Mexican Under Secretary of Public Health and Assistance, admitted that there are still Latin American populations with deplorable hygienic conditions that may be benefited by health education. Later Dr. Pesqueira described in detail the experience obtained in four Mexican rural centers for health education, localized in the states of Veracruz, Morelos, San Luis Potosí, and Coahuila, the first three in tropical or semitropical and the fourth in a temperate region. In those centers, the public is taught the prevention of endemic diseases and the necessity for various vaccinations. Knowledge of prenatal hygiene and child care is given to women. Farmers are taught how to apply DDT to their homes and to build sanitary wells. The Guatemalan delegation reported that in their country men and women are taught native Indian languages so that they can teach hygienic principles to native groups.

CORRESPONDENCE

NAVAL RESERVE UNIT

To the Editor:—I note with satisfaction in THE JOURNAL, Dec. 19, 1953, page 1466, the news of the organizing of Naval Reserve Surface Division (Medical) 9-240 in the Ninth Naval District. I am sure it will be a most useful training unit for medical reserve personnel. However, it is not, as stated in THE JOURNAL, ". . . the first time Navy medical reservists have been able to join a paid reserve unit with regularly scheduled drill periods and definite curriculums for its participants."

Naval Reserve Surface Division (Medical) 4-25 was first planned in December, 1949, and a full curriculum of instruction evolved. The division was commissioned on April 27, 1950, and has continued to function ever since. There are weekly drills in assigned quarters in the U. S. Naval Hospital, Philadelphia. In addition to routine class work, trainees are given the opportunity to supplement didactic instruction with practical demonstration in the hospital, including summer cruise of active duty in that institution. The staff includes medical officers, medical service corps officers, and nurse corps officers. The commanding officer, since the inception, has been Comdr. Henry F. Page (MC), U.S.N.R. Since its organization in 1950, the division has continued to provide rated enlisted medical personnel to the number of about 75; many of these men saw active duty during the Korean conflict. There is no doubt as to the priority of Naval Reserve Surface Division (4-25) in this field.

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To the Editor:—With reference to the article on "A New Type of Navy Reserve Unit," I would like to call to your attention Navy Reserve Unit 4-25 (Hosp.). This unit was activated under my command on April 27, 1950, and is still very much alive. It is located within the United States Naval Hospital of Philadelphia. It is staffed by reserve medical officers, reserve nurses, pharmacists, medical service corps officers, and station personnel. It furnishes an organized course of medical instruction with direct bedside teaching in the hospital wards. Twice a year an intensive two week course is available to hospital corps personnel throughout the Fourth Naval District. There are 48 scheduled drills per year for which the men receive the usual pay. The unit is flourishing but can still take interested and qualified enlisted men or women. It is an ideal springboard for young men interested in medicine. Contact can be made through Chief Dick at the Philadelphia Naval Hospital, phone HOward 5-4000, extension 3.

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MEDICATED TISSUE

To the Editor:—In recent weeks one manufacturer of paper nasal tissues has placed on the market tissues impregnated with alkyl dimethylbenzylammonium chloride ($C_8H_{17}C_{18}H_{37}$). Approximately six weeks ago, I was called to the home of a 47-year-old white woman whose chief complaints were hoarseness, a feeling of fulness in the nose and frontal sinuses, sore throat, and nasal discharge. Her clinical symptoms resembled an upper respiratory type of infection. Her temperature was 98.6 F, and her eyes showed no redness or tearing. There was much nasal congestion with redness and nasal discharge. The dorsum of the tongue and the nasopharynx were slightly edematous and quite red. The chest was normal, with blood pressure 125/80 mm. Hg, pulse 88, and respirations 18. This patient was disturbed by a hacking cough. The striking comment made by the patient was the statement that she had a "funny taste" in her mouth for the past three days but denied the use of lozenges, nosedrops, or other drugs. She stated further that she had been perfectly well until she began to notice this queer taste.

I was at quite a loss to account for the clinical signs, in view of no elevation in temperature and pulse rate, and normal chest findings. While bending over reaching into my bag that was on the floor, I noticed two cartons of paper nasal tissues on the chair beside the patient's bed. The peculiar thing about these cartons that caught my eye was the difference in color and manufacture. When I asked my patient why she had two different brands of tissues, she offered the information that the "other brand" had some kind of medication or chemical in the tissues and that she had been using these instead of her usual brand for the past three or four days. I picked up one of the nonmedicated tissues, applied it to my tongue until moist, and tasted only the dry flat taste of the tissue. I did the same with the medicated tissue, and when this tissue was wet I could distinctly taste the acrid drug. The patient was told to discontinue the use of the medicated tissues immediately and was given antihistamines in tablet form. There was diminution of the symptoms in 24 hours and complete recovery in 72 hours.

After a period of two weeks, examination of the nose and throat was normal, so I asked my patient to begin using these drug-impregnated nasal tissues again. In 48 hours, the beginning of the symptoms as previously noted was quite evident. In 72 hours her allergic manifestations caused by the alkyl dimethylbenzylammonium chloride were full blown. As before antihistamine tablets were used with excellent results.

Since this reaction resembles a virus or influenza type of infection and since millions of persons in this country use nasal tissues instead of cotton handkerchiefs, physicians may expect a number of allergic reactions to the drug in these tissues.

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BARBITURATE INTOXICATION

To the Editor:—The Oct. 3, 1953, issue of THE JOURNAL carries an article by Dr. Lloyd H. Mousel entitled "Cerebral Edema and Its Relation to Barbituric Acid Poisoning." This article is timely in view of the continued controversy regarding the advisability of the use of analeptics in the treatment of barbiturate poisoning. It is not possible to enter an exhaustive discussion of the subject at this time, but it appears desirable to comment on the data that Dr. Mousel presents and the conclusions he draws from them. The thesis presented by Dr. Mousel consists of the assumption that, since cerebral hypoxia may result in cerebral edema, acute barbiturate poisoning will cause the same complications. In a properly managed case of acute barbiturate intoxication, however, a satisfactory oxygen supply to the central nervous system can usually be maintained. One of the main features of the pathological physiology of acute barbiturate coma is the inhibition of enzyme systems concerned with the metabolism of carbohydrates. Furthermore, in central nervous system depression associated with such enzyme inhibition, the requirement for oxygen by the cerebral cells is considerably reduced, and it is well recognized that barbiturates may protect cerebral cells against hypoxia by reducing their metabolic demands. Carl F. Schmidt (*Anesthesiology* **6**:113, 1945) has even suggested that "In conditions in which cerebral anoxia is unavoidable, its effects may be in some measure ameliorated by the judicious use of narcotic drugs so as to lessen the demand of the brain for oxygen."

A publication by Fisher, Walker, and Plummer (*Am. J. Clin. Path.* **18**:462, 1948) is used by Mousel to support his contention that in prolonged barbiturate anesthesia not the barbiturate as such, but the resulting brain edema is responsible for the depression. The fact is that Fisher and associates used therapeutic doses of barbiturates in dogs, and no determination of the barbiturate content of the brain was presented. It is known that, in cases of severe human barbiturate poisoning,

large amounts of barbiturates can be found in the brain even if several days have passed since ingestion of the drug. There is good experimental evidence to show the antagonistic action of analeptics against barbiturates on the central nervous system, their primary site of action. It is also only fair to state that Fisher and associates never refer to cerebral edema.

We have no argument with the recommendation of the author that the administration of human serum albumin may help to reduce brain edema, providing it is present. We also are in complete agreement that symptomatic therapy, such as maintenance of an open airway, adequate oxygenation, and careful attention to fluid and mineral balance, is of utmost importance in the care of barbiturate poisoning. We cannot, however, accept the arguments advanced by Mousel against the use of pentylenetetrazol (Metrazol) or picrotoxin, in addition to the other treatment. Mousel refers to the prior publication by Mousel and Essex (*Anesthesiology* **2**:272, 1941) in which those authors claim that analeptics like pentylenetetrazol and picrotoxin are not only useless but harmful in the treatment of acute thiopental overdosage. It was shown in 1945 by Pikrell and Richards that adequate doses of pentylenetetrazol arouse rabbits from anesthesia induced by thiopental (Pentothal) sodium and significantly shorten the recovery time of dogs; the latter action has been corroborated in the clinical part of this study. There is no thought in our minds, though, of substituting a drug for adequate artificial respiration in anesthesia accidents of this type. However, this paper by Mousel and Essex is hardly applicable to the conditions that are found after oral ingestion of large doses of the common type of barbiturate. Similarly we must object against the use of the observation by Schmidt that the oxygen consumption of the brain increases tremendously in the convulsive stage, as a direct support against the use of analeptics in acute barbituric poisoning. Competent and carefully supervised treatment with analeptic drugs avoids the occurrence of convulsions and consequently excessively increased cerebral oxygen needs, as well as the depression that follows the convulsive attack. Mousel refers to a paper published in 1952 by Reed, Driggs, and Foote and attributes to them the statement that they have observed ". . . several deaths among patients with cardiac arrhythmia who had received fairly large doses of picrotoxin, amphetamine and caffeine, or a combination of these drugs." As a matter of fact, Reed, Driggs, and Foote have not reported a single case of tachycardia fatality in which picrotoxin alone was used without either amphetamine or caffeine. In their conclusion, they stated clearly that "Caffeine and amphetamine may cause fatal arrhythmia when given in doses exceeding 6 gm. and 300 mg. per 24 hours, respectively." These authors only mention a case of coupling that was clearly due to picrotoxin, and, when administration of the drug was stopped, the arrhythmia ceased. In another case, premature ventricular contractions were seen after several doses of picrotoxin. These are the only two cases the authors mention in which picrotoxin was responsible for nonfatal cardiac irregularities. Pentylenetetrazol was not studied by the authors at all. Parenthetically it may be remarked that Mousel and Essex themselves state that pentylenetetrazol and picrotoxin in the doses employed by them produce no change in the electrocardiogram. We agree with Reed, Driggs, and Foote that amphetamine and caffeine type of compounds may lead to serious cardiac arrhythmias, but the results do not incriminate picrotoxin or pentylenetetrazol.

Mousel presents three cases of barbiturate poisoning in his paper. It is obvious from the review of case 1 that the patient could not have absorbed a large amount of the hypnotic since she reacted with twitching to small doses of picrotoxin. The second patient was given an unstated amount of pentylenetetrazol at home to which she reacted with coughing; no further analeptics were used and probably none were necessary. The third patient was certainly undertreated with picrotoxin, because the few milligrams that were given during the first day cannot be considered adequate by anybody who advocates the use of these analeptics for the treatment of severe barbiturate poisoning.

We know of no convincing evidence that edema of the brain is a major factor in the early stages of barbiturate poisoning where adequate treatment with analeptics is most promising. It occurs rather as a late complication. We also know of no evidence indicating that the use of large doses of analeptics, under carefully controlled conditions and with avoidance of overstimulation, increases the oxygen consumption of the brain beyond the supply available to the cells. We do not condemn the use of concentrated human albumin or other similar measures for the prevention or treatment of cerebral edema, but we do not feel that the quotations of papers as used by Mousel, or the data that he presents himself, supply sufficient evidence against the judicious use of analeptics in severe barbiturate poisoning.

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PAID BLOOD DONORS

To the Editor:—As Chairman of the Blood Bank Committee of the Medical Society of the County of Queens, New York City, it is my duty to study and keep informed as to the source of blood used for transfusion purposes in New York City. The most important person in blood banking is the blood donor. The care used in selecting him or her may mean the life or death of a patient. The classification of blood donors is not difficult; they are either good or bad donors, but most important is whether they are honest or dishonest. Infectious diseases like hepatitis and malaria can be detected only by a true medical history of the donor. No matter how much a blood donor is paid, if his only reason for donating his blood is money and if a true history of his past life interferes with his getting this money, he will lie.

There is not much difference in the basic set-up of blood banks. There is, however, a very great difference in the type of donors one sees in visiting blood banks. In hospital and community blood banks where blood is donated on a voluntary basis, the donors as a rule appear healthy and well nourished. In the paid donor type of blood bank that advertises in the public press to entice indigents and other poor unfortunate persons to sell their blood for a small sum of money, one often sees poorly nourished persons who appear to be suffering from some chronic disease or habit.

An article published in the *New York State Journal of Medicine* describing the conditions mentioned above and a copy of a New York City newspaper showing paid advertisements from eight blood banks for donors were presented to the House of Delegates of the New York State Medical Society in May, 1952. The following resolution was unanimously adopted by the delegates.

"*Resolved:*—That the Medical Society of the State of New York disapprove such paid advertisements for blood donors as it borders on the unethical practice of medicine."

There are two persons involved in every blood transfusion, the person who permits a pint of blood to be drawn from his veins and the person who receives this blood. It is the solemn duty of physicians performing this service to do all in their power not to injure either the donor or the recipient. As pointed out in medical literature, not the least of the evils is the too frequent taking of blood from poorly nourished and anemic blood donors, who often have to be hospitalized after giving blood. Advertising in the public press for blood donors is wrong, and this practice is unnecessary as shown by the success of community blood banks in various parts of our country. The supply of blood for civilian needs can be maintained on a voluntary and replacement basis. Friends, relatives, and neighbors will donate blood for those who need it.

One of the most outstanding evils of the paid donor type of blood banks is that they destroy the incentive of relatives, friends, and neighbors to donate their blood. Blood donors expecting to be paid and attracted by advertisements are more apt to be dishonest and undesirable. Some lay groups are beginning to take an interest in blood banking as shown by

the following resolution adopted at the annual national convention of the Veterans of Foreign Wars. This convention met the week of Aug. 3, 1953, at Milwaukee, Wis. The following motion was unanimously passed. It stated ". . . that this convention go on record condemning the practice of the Veterans Administration of purchasing blood to be used in the Veterans Administration hospitals from the so-called Skid-Row Blood Banks and that the Red Cross or any other volunteer blood banks be the procurement agent to secure the blood required by our Veterans Administration Hospitals."

In this country today, we stand as the undisputed leaders of a world sorely in need of decent leadership. There is not much that we in the medical profession can do to assist that leadership in a political way. We can, however, assert leadership in a moral way. We can keep before us the A, B, C's of blood banking, and we can teach others the rudiments of our credo—"A is for America, B is for blood, and C is for charity." This is the formula that equates voluntary and replacement responsibility. It is at once a slogan and an expression of faith—faith that the American people will always donate blood on a charitable basis, given the prerequisite of honest information and unbiased indoctrination.

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AID FOR KOREAN PHYSICIANS

To the Editor:—At the recent clinical session of the American Medical Association, I had the privilege of reporting briefly to the House of Delegates a number of specific ways in which the physicians of the United States are assisting the physicians of Korea on the warm, friendly, "brother to brother" basis that befits the traditions both of medicine and of the free world. Some of the specific things that have been accomplished through the physicians of America working with the American-Korean Foundation are: 1. In response to the appeals published in THE JOURNAL, approximately 8,000 medical textbooks and reference books published since 1950 (with the exception of books on anatomy and histology) have been forwarded by physicians, local medical societies, medical schools, and other groups to the Alameda Medical Depot, 2155 Webster St., Alameda, Calif., (shipments should be marked KORMEDED) for shipment to American-Korean schools. 2. The American-Korean Foundation in August made grants totalling $59,000 to four Korean medical schools for general support and fellowships for establishing a tuberculosis control project and a Hansen's disease project. It gave grants to the National Institute for the Prevention of Disease and to support nursing education. 3. As a result of the cooperation of the Korean Ministry of Health, the Harvard School of Public Health, United States and United Nations medical personnel in Korea, and the American-Korean Foundation, a school of public health was started in Seoul in September. 4. The American-Korean Foundation has shipped to Korea over a million dollars in medical supplies and equipment donated by generous pharmaceutical and medical supply companies in the United States. 5. At the request of the World Medical Association, many American pharmaceutical manufacturers are sending sufficient copies of their scientific and clinical publications for distribution to all Korean medical students and to local medical societies.

These are only a few of the many ways in which the American medical profession has responded to the call to aid their Korean allies. After my brief presentation at the St. Louis meeting, a number of physicians asked me about ways in which they might give additional help. One very tangible way would be to follow the pattern that the National Education Association has developed in providing clothing packages for Korean physicians. Korean physicians prefer Western style suits, but the average height, weight, and build of a Korean physician is quite different from that of his American counterpart. Our used suits would not fit satisfactorily nor could they be successfully altered. Korean physicians are justifiably proud of their profession and their respected position in their communities. The provision of materials for new suits would be of great psychological and morale value to them. For $20, the American-Korean Foundation can make arrangements to ship to a Korean physician 6 yd. (5.5 m.) of new, 100% virgin wool cloth, 54 in. (1.4 m.) wide, in many patterns, colors, and weights, together with the cloth for lining, buttons, thread, and other findings. This is enough for at least two suits. Included in the package will be a letter in Hangul (the Korean language) explaining that this package of cloth is given to the physicians of Korea from the physicians of the United States. As proof of delivery, every Korean physician receiving a package of cloth will sign a receipt that will be returned to the American physician making the contribution. Should any physician in the United States desire to make contributions of $20 for the purpose of supplying a Korean physician with such a package, contributions may be sent to the American-Korean Foundation, 345 E. 46th St., New York 16.

Sincerely,
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CONSULTATION OR REFERRAL

To the Editor:—Recent articles on the ethics and economics of the practice of medicine have pointed up the need for the clarification of the terms referral and consultation. Many doctors of medicine fail to make a distinction between the two, so it is not surprising to find writers in newspapers and popular magazines doing the same.

Referral is generally understood as a transfer of the full responsibility of the patient to another physician who expresses willingness to accept the patient and the responsibility. The referring physician is then completely relieved of active management of the patient. There can be variations, such as referral for treatment of a certain condition while another illness is being cared for by the referring physician, but that is not usual. It is customary for the physician who accepts the patient to find out whether he is expected to send the patient back when his management is completed. Consultation is entirely different. A consultation implies cooperation. It can be for one visit or many, and the original physician is the responsible person, the responsibility being shared by others whom he selects.

When a physician is asked by another to see a patient, he usually knows whether it is for referral or consultation. One of the chief reasons that referrals and consultations have been confused is that we lack terms describing the recipient of a referral and the physician seeking consultation. In Webster, the person to whom a problem is referred is a referee; thus, a referring physician refers a patient to a referee. Consulter is the noun of to consult, to seek consultation; thus, a consulter shares his problem with a consultant. The words referee in one situation and consulter in the other sound odd, but they are unobjectionable, clear, and necessary.

When a specialist sends a patient to a colleague in another specialty, the patient usually is referred. If it is in his own specialty, he will ask for consultation and stay on the case. Internists, general practitioners, and pediatricians, because of their general knowledge and interest in the patient, usually prefer to follow closely any illness of their patients; therefore, they ask for consultation if added service is needed and they are capable of working closely with all of the other specialties. Today's general practitioner is generally well enough informed to be able to work on an equal basis with any consultant. The consultant should be happy to have a capable general physician as the manager of the patient. In those hospitals where general physicians are permitted to bring their patients for treatment and to request consultations as they need them, patients get along very well and are satisfied that the present system of medical care is quite acceptable.

A complete understanding of the terms consultation and referral is desirable. Even a recognition that there is a difference should improve some of the articles on ethics and economics that are currently appearing in widely read magazines.

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COUNCIL ON MEDICAL SERVICE

A. M. A. POLICY ON VETERANS' MEDICAL CARE

This is the second in a series of articles prepared by the Committee on Federal Medical Services of the Council on Medical Service to explain the American Medical Association position on medical care for veterans with non-service-connected disabilities and to provide background information on the subject. The first article appeared in THE JOURNAL, *Jan. 16, 1954, page 264.*

LOUIS M. ORR, M.D., *Chairman*
Committee on Federal Medical Services.

The Legislative Background

As pointed out in the first article of this series, the House of Delegates of the American Medical Association in June, 1953, urged the enactment of new legislation that would discontinue Veterans Administration hospital and medical care for patients with non-service-connected disabilities, except temporarily for war veterans with tuberculosis or neuropsychiatric disorders who are unable to pay for their own care and whose communities have inadequate facilities.

At the same time the House of Delegates expressed complete approval of the VA program of hospital and medical care for veterans who are ill or disabled as a result of their military service. The House adopted the findings of a Special Committee on Federal Medical Services, which said in its report at the December, 1952, Clinical Session: "The entire country is in complete agreement as to the rights of veterans with service-connected disabilities to receive free medical care and as to the medical obligations of their government to them."

The distinction between service-connected and non-service-connected disabilities, and the difference in A. M. A. policies regarding the two, should be kept in mind as the legislative background of the subject is examined, for a review of the history of veterans' medical care indicates that the United States Congress never intended the VA medical program to develop to its present Gargantuan proportions.

The original motive of the veterans' medical care program was the desire to provide care for veterans who had become disabled in the course of service to their country. However, through congressional acts, administrative interpretations and the happenstance of events since World War I, the program has strayed far from that original purpose. It has expanded rapidly during recent years, primarily to provide care for veterans with disabilities that occur after their discharge from military service and have no relation to military duty. Major emphasis has shifted from the care of service-connected conditions to the care of non-service-connected conditions.

Contrary to some statements and claims, there is no historical precedent or American tradition justifying the current federal program. The first purely medical benefits for veterans were authorized by the Congress in 1917 in an amendment to the War Risk Insurance Act. The medical services and supplies provided by that legislation were limited to veterans with service-connected disabilities.

The Veterans' Bureau, superseded by the Veterans Administration in 1930, was created by an Act of Congress in 1921, and the following year that new agency took over a number of U. S. Public Health Service hospitals that had been caring for veteran patients.

The first authorization for care in any kind of non-service-connected cases came in 1923. It came then because a reduction in the service-connected patient load had made some beds available. As a result, the Congress on March 4, 1923, authorized hospital care for veterans of the Spanish-American War, the Philippine Insurrection and the Boxer Rebellion suffering from neuropsychiatric or tuberculous diseases, whether or not service-connected. While this legislation involved a comparatively small number of veterans, it nevertheless required the construction of additional hospital facilities.

The doors were opened much wider with the passage of the World War Veterans Act in 1924. This legislation restated the hospitalization provisions of the amended War Risk Insurance Act and also provided liberalized hospital privileges, whenever existing government facilities were available, to veterans of any war, military occupation or expedition since 1897, not dishonorably discharged, without regard to the nature or origin of their disabilities.

The doors were swung open completely by the act of July 2, 1926, which eliminated the date 1897 and extended the benefits of the World War Veterans Act to the veterans of any war, military occupation, or expedition. This amendment qualified approximately 5 million veterans for lifetime medical care at public expense, caused a huge influx of veterans into government institutions, and further accelerated the construction of hospital facilities not needed for service-connected cases.

Seven years later Public Law 2, 73rd Congress, known as the Economy Act of 1933, repealed, among others, all previous public laws granting hospital or medical treatment or domiciliary care to veterans who served in or after the Spanish-American War. This law and its subsequent amendments provide the basic legislative authority for the current medical program of the Veterans Administration. The most important amendment, relative to non-service-connected disabilities, came in Public Law 141 of 1934, which provided:

"That any veteran of any war who was not dishonorably discharged, suffering from disability, disease or defect, who is in need of hospitalization or domiciliary care, and is unable to defray the necessary expenses therefor (including transportation to and from the Veterans Administration facility) shall be furnished necessary hospitalization or domiciliary care (including transportation) in any Veterans Administration facility, within the limitations existing in such facilities, irrespective of whether the disability, disease or defect was due to service. The statement under oath of the applicant on such form as may be prescribed by the Administrator of Veterans' Affairs shall be accepted as sufficient evidence of inability to defray necessary expenses."

Commenting on this legislation in 1947, General Omar N. Bradley, then Administrator of Veterans' Affairs, said in a letter to the Chairman of the House of Representatives Committee on Veterans' Affairs:

"It appears from the legislative history of Public Law 141, 73rd Congress, that the intention of Congress was not to reenact the liberal provisions of the World War Veterans' Act, but rather to limit hospitalization in non-service-connected cases to veterans unable to defray their own hospital expenses."

Another pertinent comment by an Administrator of Veterans' Affairs was made in 1944, when General Frank T. Hines pointed out:

"The right of war veterans to hospital treatment for non-service-connected disability was initially founded upon the theory that there would be a certain number of vacancies in hospitals acquired and maintained for care and treatment of those having a service-connected injury or disease, and such right has always been conditioned upon available facilities."

For the past 30 years, even in the period immediately after World War II, the VA hospitals have had more than enough beds for all service-connected cases. Nevertheless, and despite the legislative limitation concerning available facilities, the VA hospital system has been continually expanded. The net result, of course, has been to increase the amount of extra facilities available for non-service-connected cases. This, in effect, is a distortion of the real intent of the basic legislation.

Furthermore, in very recent years, several laws have been passed which establish presumptions of service-connection for over 30 diseases, providing they are 10% or more disabling within periods of from one to three years following separation from active duty. Even more significant is Public Law 791, 81st Congress, enacted in 1950, which provides that Spanish-American War veterans in need of outpatient treatment shall be considered as having service-connected disabilities for treatment purposes, regardless of the nature of such disabilities.

It is well to remember that when Public Law 141 was enacted in 1934, this nation had less than one-fourth of the 20 million veterans it has today. During the 1934 fiscal year less than 64,000 veterans were admitted to VA hospitals and homes. In the 1951 fiscal year almost 510,000 patients were admitted to VA hospitals. At the end of the 1936 fiscal year the VA had a total of 45,873 hospital beds. In 1952 the VA was operating 154 hospitals with almost 117,000 beds. In 1934 the VA medical program cost just over 37 million dollars, but the appropriation for the current fiscal year is over 747 million dollars.

The impact and implications of the 20-year-old basic legislation, in the light of present day conditions and the prospective future situation, call for a thorough reconsideration of national policy concerning VA hospital and medical care for veterans with non-service-connected disabilities.

MEDICAL MOTION PICTURES

NEW FILMS ADDED TO A. M. A. MOTION PICTURE LIBRARY

School Health in Action: 16 mm., color, sound, showing time 25 minutes. Produced in 1953 by Sam Orleans Associates for the Oklahoma State Department of Health with the cooperation of the Oklahoma State Department of Education, the Oklahoma State Medical Society, and the Oklahoma Advisory Health Council. Procurable on loan (service charge $2.00) from Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

This is a film that very cleverly shows how the school health council can play a role in bringing a school health program into being. An accident involving one of the children in front of the school brings the PTA to the realization of a "need." At the monthly PTA meeting, various parents speak out about their problems and demand that something be done. The teacher and principal follow suit by relating conditions at the school. Examples of how the school lacks a good health instruction program, a safe and sanitary environment, and health services are shown. In contrast, the school health council goes to work, and improvements are made immediately. Specific examples are given of how the problems are treated by the school health council. This is an excellent film for stimulating discussion in educational groups, service clubs, and medical audiences.

Oral Cancer: The Problem of Early Diagnosis: 16 mm., color, sound, showing time 32 minutes. Produced in 1953 by Audio Productions, New York, for the American Cancer Society, Inc., and National Cancer Institute, U. S. Department of Health, Education and Welfare. Procurable on loan (service charge $2.00) from Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

On the premise that discovery of oral cancer in an early stage is the equal responsibility of dentists and physicians, this film points out in an introductory statistical sequence that lesions of all sizes have a curability rate of 32% as against 57% for those of 2 cm. or less. Clinical material follows illustrating early lesions of the tongue, floor of the mouth, gingiva, cheek, palate, and lip. The technique of biopsy and the method of thorough oral examination are illustrated. Emphasis is on the fact that only by routine, thorough examination of the oral cavity and the nodes of the neck is it possible to discover cancer of the oral cavity in an early stage. As the title indicates, this well-organized teaching film deals with the problem of early diagnosis; the subject is covered very thoroughly. No mention is made of treatment. It is highly recommended for general practitioners and dentists. It should also be of value to interns, residents, and medical students. The photography is excellent, and the narration is especially well done.

Manual Rotation in the Management of Occiput Posterior and Occiput Transverse Positions: 16 mm., color, silent, showing time 32 minutes. Directed by H. J. Holloway, M.D., and E. S. Burge, M.D. Produced in 1943 by the Department of Visual Medical Education in cooperation with the Department of Obstetrics and Gynecology, Northwestern University. Procurable on loan (service charge $4.00) from Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

Position diagnosis, manual rotation of occiput to an anterior position, forceps application, and extraction for each of the posterior and transverse positions are explained and illustrated first on a manikin, then by actual delivery. A complete review of this film was published in THE JOURNAL, July 19, 1947, page 1043.

MOTION PICTURE REVIEW

All My Babies: 16 mm., black and white, sound, showing time 54 minutes. Sponsored by the Georgia Department of Public Health. Produced in 1952 by the Medical Audio-Visual Institute of the Association of American Medical Colleges. Procurable on rental ($10.00) or on purchase ($150.00) from the Center for Mass Communication, 413 West 117th St., New York 27.

In Georgia, because of the present shortage of doctors and nurses, there are many areas where local midwives are still essential. The staffs of local health departments are responsible for the supervision and certification of the 1,322 local midwives who delivered 18,741 of the total of 95,161 live births in 1951. This film shows clearly and simply the methods a midwife should follow from the time she takes a case until the baby is taken to its first Well Baby clinic. The film was completely photographed in Georgia and features a certified local midwife, her patients, and the doctors and nurses who supervise the local midwife training program. "All My Babies" is an educational picture designed to improve existing services to mothers and children but not necessarily to approve or promote the particular type of care represented. This extremely well-organized picture is especially recommended for teaching midwives. It is also suitable for student nurses, public health nurses, medical social workers, and graduate nurses in obstetric departments. The photography and direction are outstanding.

BUSINESS PRACTICE

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

COLLECTIONS

A physician pursues collections not merely for the money involved but because he wishes to retain his relationship as the patient's personal physician. Because an outstanding medical bill may deter a patient from returning for further treatment, medical collections must be handled differently from other collections, and the reasons for any delinquency in payment should be determined. Most patients are honest—probably less than 4% are financial "deadbeats" who have no intention of paying. There may be, however, 8 to 10% who are temporarily unable to pay and another 16% who may be living beyond their incomes. Recognizing these types is a problem, but faith in mankind and experience soon help the physician to separate the conscientious persons from the deadbeats. One physician says a person who lives beyond his income always expresses a desire to "spare no expense." When faced with questions about nonpayment, he says, "I'll pay it all in the future," whereas the average honest patient says, "I'll pay you a certain amount each month." The first step in making collections is to send carefully itemized statements at regular intervals. Some doctors who receive no payment after two or three statements begin marking subsequent bills with "Please"

or "No payment has been received since .....date. We call this to your attention." Others believe that this approach is rather cold and formal and does not really aid in collections.

The ideal method of pursuing collections, in the opinion of many physicians, is the personal letter approach. A form letter that is recognized as such by the recipient is of dubious value. Letters should be friendly, requesting the patient to explain why payment has not been made. These letters should indicate that the doctor is sincerely interested in his story and merely wants to help him straighten out his financial obligations. The patient should be invited to stop in at the doctor's office to explain his reason for nonpayment, so that, if possible, special arrangements can be worked out. To give the patient an opportunity to save face, these letters, which should always be signed by the doctor himself, can suggest that the patient may have overlooked previous statements. On receipt of such a letter, most patients will make some effort to explain their delinquency. If a patient really is in financial straits, the doctor may be able to get public assistance help for him, or if the financial difficulty is temporary, the doctor and patient may be able to work out a satisfactory installment-plan type of payment program. Sometimes, even when friendly letters offering help have been sent, patients ignore their responsibilities. Some doctors send a second letter, expressing surprise that the first letter was ignored and firmly stating the person's responsibility to pay his indebtedness. When persons do not act in good faith, a firmer collection procedure can be followed.

When patients refuse to pay after receiving several statements and letters, some physicians write a short, firm letter stating that, under the circumstances, there is no course left but to turn the account over to a collection agency for further action. This should never be done, however, until a doctor is certain the bill cannot be collected in his office. It is recommended that no bill be submitted for collection until it has been on the physician's books for at least six months or the patient has refused to pay or declined responsibility. A physician will not necessarily lose the good will of the patient by suing for payment. A management official says that, strangely enough, when a doctor-client sued two patients for large sums, the patients lost the cases, paid up, and were back in the doctor's office for treatment very shortly. Most physicians believe, however, that it is unwise to resort to the courts to collect medical bills unless there are unusual circumstances.

When a physician loses his personal touch, becomes cynical, and charges all the traffic will bear, he is not a good doctor; on the other hand, if he follows the principles described here, he should be able to handle most collection problems with ease. It is important to get adequate information on the patient's first visit; to send itemized statements regularly; and to gage the patient's ability to pay as accurately as possible. When statements are ignored, a methodical follow-up should be started, and a friendly, interested letter asking why payment has not been made and offering assistance in planning partial payments should be sent. A balance between humanitarianism and business-like firmness should be maintained in pursuing medical collections, and the account should not be turned over to an outside agency for collection unless there is unmistakable evidence that it cannot be collected in any other way.

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

COLLECTION AGENCIES

A physician who sincerely has tried to collect his accounts and believes that he can do no more may wish to turn his accounts over to a collection agency. There are two reasons for judicious use of a collection service. First, it is only fair to conscientious patients who meet obligations promptly to try to collect from those who are negligent about paying, and, second, the physician should protect his financial interests. One of medicine's biggest public relations headaches is the agency that uses unscrupulous tactics such as lumping other accounts owed by the patient together for collection purposes or pursuing threat or scare techniques to recover on old bills. Repercussions from these methods may have a disastrous effect on a doctor's practice. An ethical agency, however, can do a real public relations job for physicians by ferreting out the patients who need special consideration and following through in collecting from persons who can pay. Because a different approach is necessary in pursuing medical collections, a physician should thoroughly acquaint himself with the collection methods used by a respective bureau before making use of its services. The main types of bureau are: 1. A bureau owned and operated as an integral part of a county medical society, e. g., Milwaukee County, Wisconsin. The manager of this kind of bureau is a society employee. There are not many of these in the United States. 2. A bureau operated separately from the medical society but partially controlled by the medical and dental profession, e. g., the Columbus Bureau of Medical Economics. This type of bureau is not necessarily controlled through the society but often through a separately formed board of directors composed of professional men. 3. A bureau privately owned and operated commercially for profit. This type of bureau is common throughout the United States.

Many private bureaus are willing to work out policies in regard to medical collections that are agreeable to physicians within the medical society. Representatives of the society should approach the owners of local bureaus serving its members and discuss the importance of employing sound public relations principles in collecting medical bills. Some agencies will be glad to appoint a liaison committee to work with society members in developing policy and a method for special handling of medical accounts. In an effort to encourage their members to patronize ethical bureaus, the Los Angeles County Medical Association has worked out an application for bureaus that wish society approval. Such an application could be worded as follows:

PROPOSED APPLICATION OF A MEDICAL COLLECTION BUREAU TO BECOME AN "APPROVED BUREAU" OF THE ..... COUNTY MEDICAL ASSOCIATION

(To be filled out and signed by a limited number of substantial medical collectors—by invitation only)

We recognize that a portion of the unfavorable publicity directed against the existing medical fee system is due to the occasionally tactless and irresponsible disregard of the real interests of the doctor by some collectors employed to collect delinquent medical accounts. We wish to conduct our bureau in a manner that will contribute to better medical public relations and to participate in that portion of the public relations program of the ..... County Medical Association designed to improve unfavorable public attitudes toward medical accounts. We request that we be designated an "Approved Bureau" of the Association for the period Jan. 1, 1954, to Dec. 31, 1954.

In return for our sincere cooperation, we understand that the members of the ..... Association will be urged to refer their delinquent accounts requiring professional collection to us or to any other approved bureau, and we further understand that approval of our bureau may be withdrawn for cause at any time.

If accepted as an approved bureau, we agree that we will handle such delinquent accounts as may be referred to us by the Association's members in accordance with the spirit as well as the letter of the following:

(Note: These standards are to apply to our relations with any member of the Association, and to the handling of their accounts received for collection.)

General.—We will not indicate to debtors or to the general public, on our letterhead or in any other way, that we are an approved bureau of the ..... County Medical Association.

Disputes with Patients.—Bona fide disputes or objections to accounts will be referred to the doctor for final guidance.

Disputes with Clients.—In the event of a dispute between ourselves and a member of the Association, we agree that we will be bound by any decision of the Medical Economics Committee of the Association.

Fee Complaint and Professional Conduct Committees.—If the debtor shall file a complaint with the Fee Complaint or Professional Conduct committees of the Association, we agree, on request of the Committee, to postpone collection action at any stage of collection pending the decision or recommendations of the Committee and will comply with the recommendations of the Committee as to the disposition of the questioned account.

Adjustments in Fees.—We will notify the doctor of situations that may make reduction or outright cancellation of an account desirable, and we will be bound by the doctor's decision in such cases.

Malpractice.—We will be alert to threats of retaliatory malpractice action and will refer all express or implied threats to the doctor for instructions.

Budget Settlements.—We will offer to arrange budget payment plans for liquidation of accounts in accordance with the debtor's means before bringing strong collection pressure.

Legal Action.—We will avoid legal action except as a last resort. Such action will then be undertaken only with the express written consent of the doctor in each case. Prior to the filing of any action, search shall be made of the court dockets, superior and municipal courts, to ascertain whether or not the debtor already has an action for malpractice or breach of contract against the doctor on file.

Good Faith with Debtors.—We will keep faith with the debtor in all respects and will not take advantage of trivial violations of arranged budget terms as an excuse for demand for full payment. It is recognized, however, that some discretionary leeway is allowable in respect to known "dodgers," "skips," the bankrupt, etc.

Interest in Nonlegal Cases.—We agree to refrain from collecting interest, "carrying charges," or "collection fees" on nonlegal cases. (Interest may be collected where specifically provided for in a note or other written instrument, but such interest will be accounted for and remitted to the doctor less the proper commission charge.)

Interest in Legal Cases.—When interest is collected in legal cases, we agree to report and remit such interest to the doctor less the proper commission charge.

Forwarded Accounts.—In cases where it is necessary to forward an account to other localities, we will be certain that the forwardee selected will handle the account in an ethically acceptable manner.

"Pay Offs" To Business Managers.—We agree to refrain from entering into arrangements with accounts, auditors, business representatives, or other employees of the doctor under which we shall pay money to such representative in return for the placement of collection business. If such arrangements now exist, we agree to discontinue them.

Inspection of Records.—We agree that all collection and financial records in our office involving members of the ..... County Medical Association will be available for inspection at any reasonable time by an authorized representative of the Medical Economics Committee of the ..... County Medical Association for purposes related to matters contained in this application or specific collection cases.

State Collection Agency Law.—In collection matters not specifically covered in these standards of conduct, the rules and regulations established by the Secretary of State through the chief of the Division of Collection Agencies shall govern.

STATISTICAL AND FINANCIAL DATA

The following statistical and financial data are submitted for the confidential information of the Committee in judging our qualifications for approval with the intention that the Committee shall rely on its veracity:

1. Our business is licensed under the following name:
2. We have been a licensed collection agency in the County of ..... for .... years.
3. The percentage of our total collection business with physicians, dentists, hospitals, laboratories, etc. (excluding business with chiropractors and veterinarians) is .....%.
4. Our assets amount to .....
5. Our liabilities amount to .....
6. Our net worth is .....

This application is dated at.....,

this .... day of ..... 19.....

Name of Applicant.....

By.....

Title.....

Note: This financial statement must be notarized.

In brief then, to choose a collection agency wisely, select a local agency with a reputation for reliability and good standing in the community. Avoid out-of-state and mail order agencies. Investigate the methods used. Ask to see the type of first notice and follow-up material. Check up on the ownership and financial responsibility of the agency and its promptness in settling for money collected. Do not sign a contract—better agencies seldom use them. Make sure that no legal action or threat of it will be taken without your consent, that the agency will be governed by your instructions to collect only within the scope of good public relations, and that it will report cases deserving your special consideration and accept adjustment, withdrawal, or cancellation of an account when, in your opinion, such action is advisable in the interest of good public relations. Once an account has been turned over to an agency, the agency is entitled to a share of any sums paid by the patient either to you or to it. One should be fair and recognize the assistance given in collecting this amount. Be fair with your agency. If these standards cannot be met by any local agency, it is better not to use any collection service at all.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

American Journal of Clinical Pathology, Baltimore

23:1061-1186 (Nov.) 1953

SYMPOSIUM ON FLUID AND ELECTROLYTE BALANCE

Role of Pathologist in Management of Patients with Fluid and Electrolyte Disturbances. D. A. Nickerson.—p. 1061.
Role of Kidneys in Regulation of Fluid and Electrolyte Balance. J. H. Bland.—p. 1070.
Respiratory Factors in Disturbance of Acid-Base Balance. H. F. Weisberg.—p. 1082.
Fundamental Features of Metabolism of Sodium and Potassium. T. S. Danowski.—p. 1095.
Disturbances of Internal Environment and Their Correction. H. A. Schroeder and H. M. Perry Jr.—p. 1100.
Management of Water and Electrolyte Problems in Surgery. M. M. Musselman.—p. 1121.
Quantitative Requirements of Infant and Child for Water and Electrolyte Under Varying Conditions. W. M. Wallace.—p. 1133.
Theoretical and Practical Considerations in Correcting Fluid in Electrolyte Loses: A Résumé. W. S. Hoffman.—p. 1142.

American Journal of Ophthalmology, Chicago

36:1333-1496 (Oct.) 1953

Retrolental Fibroplasia and Related Ocular Diseases: Classification, Etiology, and Prophylaxis. T. S. Szewczyk.—p. 1336.
Angiomatosis Retinae (Von Hippel's Disease) 11 Years After Irradiation. F. C. Cordes and A. Schwartz.—p. 1362.
Epidemic Keratoconjunctivitis: Study of Small Epidemic. T. A. Cockburn, H. Nitowsky, T. Robison and F. S. Cheever.—p. 1367.
Surgical Correction of Spastic Senile Entropion: New Method. D. B. Kirby.—p. 1372.
Cataracts in Galactosemia. J. Johnson.—p. 1380.
Narrow-Angle Glaucoma: Effect of Miosis on Narrow-Angle Mechanism and Intraocular Pressure. O. Barkan.—p. 1387.
Contamination of Eye Medications: Practical Methods of Prevention. J. H. King Jr.—p. 1389.
Pigmentary Glaucoma and Its Relation to Krukenberg's Spindles. F. P. Calhoun Jr.—p. 1398.
Tapetoretinal Degeneration: Report of Four Cases of Rare Form of Luminescent Crystalline Tapetoretinal Degeneration: With Discussion of Its Cause. J. L. Pavía.—p. 1416.
Etiologic Considerations of Vertical Muscle Defects: I. General Considerations: Classification: Supranuclear Vertical Defects. W. H. Fink. —p. 1427.
Amblyopia in Adults: Treatment of Those Engaged in Various Industries. M. D. Kasser and J. B. Feldman.—p. 1443.

American Journal of Physical Medicine, Baltimore

32:261-330 (Oct.) 1953. **Partial Index**

Range of Hip Rotation and Torque of Hip Rotator Muscle Groups. E. T. Haley.—p. 261.
Permanent Total Blindness Associated with Severe Physical Disability Including Bilateral Amputation of Hands: Report of Case with Critical Evaluation of Rehabilitation Techniques. J. H. Kuitert and F. E. Vultee.—p. 276.
*Intelligence Levels in Cerebral Palsied Children. L. B. Hohman.—p. 282.

Intelligence Levels in Cerebral Palsied Children.—In a 20 year period of observation Hohman gained the impression that there was a high percentage of mental retardation in patients with cerebral palsy. Observing the patients who came to the North Carolina Cerebral Palsy Hospital for several years, he was struck by the rarity of good intelligence in these children. He feels that enthusiasts in the field of study and treatment of cerebral palsy have been loath to accept the fact that the chief hindrances to treatment was mental deficiency. They believed that the physical handicap masked the underlying good intelligence of these children. The author cites investigators in England who found that the intelligence quotient of only 23% of 354 children with cerebral palsy was in the average range. American investigators obtained about the same results in testing the intelligence of 330 children with cerebral palsy. Hohman too, in investigating the intelligence of patients at the Cerebral Palsy Hospital in North Carolina, found that at least 75% are below average, in contrast to 20% in the normal population, and that at least 50% are seriously retarded and mentally defective. He agrees with those who urge a reevaluation of the treatment and education program in the light of these facts. Furthermore, in the group with average intelligence, the handicaps are frequently so severe that it will be impossible to train these children so their intelligence can be put to any useful social or economic importance. He is in favor of teaching and training, bracing, surgical intervention, and the like to make the defective cerebral palsied child capable of self-care. He would want the same for the mental defective who does not have cerebral palsy. The problem of the severe mental defective can be solved only by placement in an institution. The efforts of highly trained personnel should be devoted to the small number of patients who have average intelligence, but even in this group a sizable portion will be excluded from profitable training by their severe disabilities.

Annals of Allergy, Minneapolis

11:555-688 (Sept.-Oct.) 1953

Reactions of Toxicity Incident to Antibiotic Therapy and Their Management. W. E. Herrell.—p. 555.
*Incidence of Allergy to Drugs in Pediatric Practice. M. Berkowitz, J. Glaser and D. E. Johnstone.—p. 561.
Bronchial Asthma, Secondary to Chronic Pulmonary Mycosis. P. J. Van der Werff.—p. 567.
Cleansing Agents—Irritating and Non-Irritating to the Skin. L. S. Nelson and A. V. Stoesser.—p. 572.
Diphenmethanil (Prantal) Methylsulfate: New Approach in Treatment of Poison Ivy Dermatitis. F. A. Parish.—p. 580.
Adenotonsillectomy and Its Relation to Asthma. G. Sobel.—p. 583.
Sensitivity to Grape and Grape Products Including Wine: Case Report. E. A. Brown.—p. 590.
Effect of Epinephrine Ointment on Scratched Human Skin. E. A. Ames. —p. 594.
Spirographic Studies of Asthmatics: Delayed Expiratory Sign. A. E. Bachmann, G. R. Moreno, M. A. Solari and M. C. A. De Lothringer. —p. 599.
Bacterial Allergy in Rheumatic Diseases. J. C. Small and J. C. Small Jr. —p. 609.
Unusual Toxic Reactions to Sulfonamide and Antibiotic Therapy: Review of Literature from 1936-1953. S. L. Lane, A. H. Kutscher and R. Segall. —p. 615.
Repeated Injections of Horse Serum in Rabbit (Historical Document). M. M. Arthus.—p. 633.

Allergy to Drugs in Pediatric Practice.—Questionnaires were prepared to record whether a child had ever been treated with a certain drug, and mothers were questioned concerning adverse reactions of the child to these drugs. Unless she was certain both that her child had been given a certain drug and that the child had reacted unfavorably to it, the particular drug was not checked off the questionnaire as having been given. In addition each mother was questioned as to the incidence of allergic disease in her child. Using these forms, drug histories were obtained on patients seen in the private practice of a pediatric allergist as well as in the general pediatric outpatient clinic of the Rochester General Hospital. This study included 500 infants and children ranging in age from 2 months to 15 years. Three hundred thirty-two (66.4%) of the 500 children had a history of allergic disease. The remaining 168 children (33.6%) had no history of allergic disease and were considered as nonallergic. With regard to penicillin, 10% of the allergic children had reactions, whereas no allergic reactions occurred in the nonallergic children. The incidence of allergic reactions to chlortetracycline (Aureomycin) was 3.7% in the allergic, and

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Titles marked with an asterisk (*) are abstracted.

no such reactions were observed in the nonallergic children. Oxytetracycline (Terramycin) caused allergic reaction in 3 of 88 allergic children and in none of 24 nonallergic children. Side reactions occurred in both groups, but in the allergic the percentage of such reactions was higher (10.2% compared with 8.3%). Sulfonamides also caused reactions in both groups, but here again the frequency was greater in the allergic than in the nonallergic (6.7 and 4.7%). Diphenhydramine (Benadryl) hydrochloride and tripelennamine (Pyribenzamine) were given mostly to allergic children and caused reactions only in these, not in the few nonallergic children. Acetylsalicylic acid (aspirin), the drug most commonly used in pediatric practice, was taken by 450 children of whom 306 were allergic. Allergic reactions to this drug developed in six (1.9%). No allergic reactions occurred in the 144 nonallergic children. Codeine was given to 231 children, of whom 191 were allergic. In three (1.5%) of the allergic children allergic reactions developed, urticaria in two and a generalized morbilliform rash in one. Side reactions, such as nausea, vomiting, restlessness, gastric distress, and excitement occurred in 7 (3.6%) of the allergic group; no reactions occurred in the 40 nonallergic children. Phenobarbital was taken by 260 of the children, of whom 183 were allergic. There were no allergic reactions to this drug. However, 24 (13.1%) showed side reactions. Only one nonallergic child had a side reaction. These studies revealed a higher incidence of drug reactions in allergic as compared with nonallergic children, 20% as compared with 2.4%, an eightfold difference. There are indications that side-effects represent in most instances minor allergic reactions.

Annals of Surgery, Philadelphia

138:489-680 (Oct.) 1953

*Cancer of Lung—An Analysis of 532 Consecutive Cases. J. H. Gibbon Jr., F. F. Allbritten Jr., J. Y. Templeton III and T. F. Nealon Jr. —p. 489.

*Capsular Operation for Parkinsonism: Attendant Functional Changes. J. Browder, H. A. Kaplan and A. M. Rabiner.—p. 502.

Extradural Hematomas of Posterior Fossa. E. Campbell, R. D. Whitfield and R. Greenwood.—p. 509.

Brain Abscess Associated with Pulmonary Angiomatous Malformation. W. E. Stern and H. C. Naffziger.—p. 521.

*Total Thoracic and Partial to Total Lumbar Sympathectomy, Splanchnicectomy and Celiac Ganglionectomy for Hypertension. K. S. Grimson, E. S. Orgain, B. Anderson and G. J. D'Angelo.—p. 532.

Neuro-Endocrine Response to Injury: Present Status of Problem. D. M. Hume.—p. 548.

Electro-Encephalogram in Evaluation of Effects of Anesthetic Agents and Carbon Dioxide Accumulation During Survey. G. H. A. Clowes Jr., H. E. Kretchmer, R. W. McBurney and F. A. Simeone.—p. 558.

Evaluation of Solutions for Fragmentation and Dissolution of Gallstones and Their Effect on Liver and Ductal Tissue. R. R. Best, J. A. Rasmussen and C. E. Wilson.—p. 570.

Splenoportography. D. R. Cooper, R. C. Brown, C. H. Stone III and L. K. Ferguson.—p. 582.

Potassium Movement in Acute Liver Damage. J. D. Stewart, W. H. Potter, R. S. Hubbard and M. N. Andersen.—p. 593.

Liver Regeneration Following Portacaval Transposition in Dogs. C. G. Child III, D. Barr, G. R. Holswade and C. S. Harrison.—p. 600.

Physiologic Studies in Cases of Stricture of Common Bile Duct: 28-Year Survey with Data on 254 Patients. W. Walters.—p. 609.

Postmortem Homografts as "Biological Dressings" for Extensive Burns and Denuded Areas: Immediate and Preserved Homografts as Life-Saving Procedures. J. B. Brown, M. P. Fryer, P. Randall and M. Lu.—p. 618.

Treatment of Carcinoma of Esophagus and Cardia by Resection and Postoperative Supervoltage Roentgen Rays. H. D. Adams, H. F. Hare, W. L. Davis and others.—p. 631.

Malignant Melanoma: Appraisal of Disease and Analysis of 105 Cases. H. W. Meyer and S. L. Gumport.—p. 643 .

Carcinoma of Parathyroid Glands: 4 Cases Among 148 Patients with Hyperparathyroidism. O. Cope, G. L. Nardi and B. Castleman. —p. 661.

Surgical Management of Angiofibroma of Nasopharynx. A. J. Kremen. —p. 672.

Cancer of Lung.—Gibbon and associates report observations on 532 patients with proved cancer of the lung who were treated at the Jefferson Medical College Hospital between April 1, 1946, and Jan. 1, 1953. The histological diagnosis was based in 484 cases on examination of tissue and in the remaining 48 cases on the finding of cancer cells in the bronchial secretions. Cases in which histological evidence could not be obtained were not included in this study. Since life expectancy has not been greatly extended by any means other than surgical extirpation, the authors attempted radical extirpation of the cancer in all patients who did not have evidence of spread beyond the limits of the operative field. Exceptions to this in 22 instances were due to refusal to accept surgical treatment by 12 patients and the presence of other fatal systemic disease in 10 patients. In the remaining 130 of the 152 patients who were not operated on, there was evidence of metastasis outside of the involved hemithorax. The authors never undertook removal of part of the cancer for palliative treatment, but occasionally it was realized during operation that the cancer had spread to the point that complete removal was impossible. Only in these instances was neoplastic tissue knowingly left behind. The cancer was extirpated in 205 of 380 patients operated on. The whole lung with the regional lymphatic system was removed in 190 instances, lobectomy or bilobectomy was performed in 14 cases, and local excision of the cancer was done in one instance because of an error in diagnosis. Less than total removal of the lung was done only when there was: (1) extensive diminution of pulmonary reserve; (2) uncertainty of diagnosis when the lesion was small and peripherally located with no evidence of central extension; and (3) extensive invasion of the thoracic wall by the contiguous cancer. A lobectomy was done occasionally to identify histologically a suspected cancer. When confirmation was obtained, the remaining portion of the lung with the regional lymphatic system was extirpated. The operative mortality was 22%; the extent of involvement appears to be a significant factor in mortality. In cases in which the tumor extended beyond the lung, the mortality was twice that of the cases in which the mediastinal nodes or contiguous structures were not involved. The five year survival rate was 22% of the patients with the cancer removed and 9% of the entire series. Analysis of this and other reported series appears to indicate that the proportion of the total number of patients leaving the hospital alive with the cancer removed is directly related to the proportion of the total number of patients in whom extirpation of the cancer is attempted.

Capsular Operation for Parkinsonism.—Browder and co-workers point out that medicinal therapies have failed to influence the disabling symptoms of paralysis agitans (Parkinsonism), and surgeons have tried a variety of operations in an attempt to modify favorably the tremor and the rigidity. The authors briefly mention a number of these methods, giving particular attention to the work of Meyers, who was one of their associates when in 1939 he began to try several somewhat related surgical procedures, singly and in combination: undercutting of the premotor cortex, removal of the head of the caudate nucleus, partial section of the fibers of the anterior limb of the internal capsule, and interruption of the pallidofugal fibers. After Meyers entered the military service, Browder continued the search for an operation that would abolish tremor and rigidity without residual enduring paralysis. The capsular operation as now performed by these authors is described. It is a procedure that, when properly executed, abolishes the tremor and rigidity of unilateral paralysis agitans without residual paralysis. They emphasize that this procedure should be restricted to patients in the younger and middle age groups with symptoms and signs preponderantly unilateral. This exclusion of fully 90% of patients with this disease from the possible benefits of the operation indicates that further search should be made for a procedure applicable to a larger group of patients with paralysis agitans. Changes in neural functions observed during and subsequent to this operation are presented with the thought that an operation might be evolved that will be applicable to many of the persons now denied the benefits of surgical therapy. No functional changes accompanied or followed surgical exposure of a frontal lobe, transcortical approach to the anterior limits of a lateral ventricle, removal of the superior one-third of the head of the caudate nucleus, and division of the rostral three-fifths of the fibers passing through the anterior limb of an internal capsule, but since in no instance was the operation terminated at this point, the late effects of this amount of ablation and division of neural structures is unknown. Many patients who were subjected to the complete procedure seem happier, smile readily, but have little desire to return to a gainful occupation. There is an enduring "lobotomy-like" effect that may be attributed to a combination of frontal subcortical fiber pathway damage and the division of the fibers in the anterior limb of the internal capsule.

Sympathectomy for Hypertension.—Since it was demonstrated that splanchnicectomy did not significantly interrupt vasopressor pathways, total sympathectomy for hypertension was planned. Preliminary anatomic dissections demonstrated that a transthoracic approach through two incisions on each side best exposed the important stellate and splanchnic regions. The technique of total thoracic and partial to total lumbar sympathectomy and celiac ganglionectomy in the treatment of hypertension was reported in 1941. Denervation of the heart, other thoracic viscera and head, arms, and upper body with adequate protection against regeneration required removal of the stellate ganglions, along with the upper thoracic chain. Denervation of the splanchnic area was effected by removal of the lower thoracic chain, splanchnic nerves, and upper one or two lumbar ganglions with complete or partial celiac ganglionectomy. With most cell stations (chain, stellate, and celiac) largely removed, the cholinergic preganglionic fibers are less likely to achieve functional regeneration. The present report reviews observations on 172 patients subjected to total thoracic and partial to total thoracic and partial to total lumbar sympathectomy, splanchnicectomy, and celiac ganglionectomy during the last 13 years, the first operation of this type having been performed in June, 1940. A report on the first 113 of these patients appeared in 1949, and these are again considered in the present report. Reduction of blood pressure, with the patient lying down, to near normal values continues in one-third of the 140 patients now living. Survival rates, 84.5% at 5 years, 84.2% at 5 to 10 years, and 56.2% at 10 to 13 years have definitely surpassed those of reported follow-up studies of hypertensive patients not treated surgically and somewhat surpassed those of reported studies after splanchnicectomy.

Antibiotics & Chemotherapy, Washington, D. C.

5:957-1074 (Oct.) 1953. **Partial Index**

Rate of Bacterial Metabolism and Action of Streptomycin. E. D. Rosenblum and V. Bryson.—p. 957.
Cardicin, Antibiotic Having Antimicrobial and Antiviral Properties. R. A. Machlowitz, J. Charney, O. Gibson and others.—p. 966.
Beta-Diethylaminoethyl Ester of Benzyl Penicillin: II. Possible Transport Mechanism Involving Formed Elements of Blood. E. T. Parmelee, R. E. Rhodes and R. J. Ferlauto.—p. 971.
Effect of Streptomycin on Oxidative Assimilation of Escherichia Coli. A. E. Wasserman.—p. 977.
*Antibiotic and Antigenic Therapy of Brucellosis with Special Reference to Chronic Disease: Report of 421 Cases. H. J. Harris.—p. 982.
Influence of Carbomycin on Blood Coagulation. D. I. Macht and D. Kremen.—p. 990.
Antibiotics in Treatment of Salmonellosis: Evaluation Through Studies on Experimentally Infected Chicks. K. C. Milner and M. F. Shaffer.—p. 995.
Oxytetracycline Toxicity Studies in Dogs. J. Sedwitz, J. C. Bateman and C. T. Klopp.—p. 1015.
Stability Studies of Penicillin Products. F. H. Buckwalter and E. A. Walsh.—p. 1020.
Bacterial Susceptibility to Antibiotics: V. Relative Susceptibility of Staphylococci and Enterococci to Erythromycin, Carbomycin and Combination of Chlortetracycline, Oxytetracycline and Chloramphenicol. G. M. Eisenberg, H. F. Flippin and J. M. O'Loughlin.—p. 1026.
Some Laboratory and Clinical Experiences with Erythromycin. M. E. Grigsby, J. B. Johnson and G. W. Simmons.—p. 1029.

Antibiotic and Antigenic Therapy of Brucellosis.—A diagnosis of brucellosis was made in 421 of 759 patients studied between 1945 and 1951, because of suspected brucellosis. The remaining 338 patients were considered to have recovered from brucellosis or to have other illness. Among the 421 cases there were 15 acute cases, 28 chronic cases with acute exacerbation, and 378 chronic cases without a history of previous acute brucellosis. Diagnostic procedures included: (1) blood agglutination reaction (microscopic slide and standard tube techniques); (2) opsonocytophagic reaction; (3) blood complement fixation reaction; (4) culture of blood, bile, spinal fluid, urine, and feces and histological study of biopsy tissue whenever indicated, and (5) intradermal reaction. In acute febrile cases, antibiotics (streptomycin or dihydrostreptomycin parenterally and sulfadiazine orally or chlortetracycline, chloramphenicol, or oxytetracycline orally) were used routinely, singly or in various combinations. Brucella antigens were not employed in the acute phase but often were used if chronic illness followed. In chronic cases, especially those of questionable activity, treatment usually was initiated with brucella antigens. The antibiotics were employed and alternated or combined with brucella antigen whenever recovery was not complete. In active chronic brucellosis antibiotics were given orally, and brucella antigen added if necessary. The use of brucella antigens was predicated on the theory that the antibiotics may have a bacteriostatic effect only on circulating brucella organisms and little effect on those living intracellulary in the spleen, fallopian tubes, prostate, and lymph nodes. Streptomycin in combination with splenectomy or sulfadiazine produced cure in two acute cases. Of four patients with chronic brucellosis, two remained well after treatment with streptomycin plus sulfadiazine, whereas the other two experienced only temporary improvement with streptomycin. Dihydrostreptomycin was employed in 17 chronic cases with temporary improvement in 16 and failure in 1. Chlortetracycline proved effective in six acute cases. Of the 207 with chronic disease treated with chlortetracycline, 93 patients remained well; with brucella antigen given concomitantly or between courses of chlortetracycline, an additional 89 patients recovered. Little or no lasting benefits were obtained in the others because of ineradicable foci of infection or error in diagnosis. Of two patients with acute brucellosis treated with chloramphenicol, one remained well for 24 months; the other recovered after receiving oxytetracycline. Of 49 with chronic disease treated with chloramphenicol, 19 recovered after receiving this drug alone and 22 patients recovered after brucella antigen was added. Only temporary improvement occurred in five patients; one died of an unrelated illness; and three patients stopped treatment. Oxytetracycline was given to 5 patients with acute and 122 with chronic brucellosis. All with the acute form responded favorably. Of those with the chronic form, 58 responded to this drug alone and 51 recovered after brucella antigen was given in addition; only moderate improvement occurred in 7 patients. The authors feel that the high percentage of recoveries may be explained by repeated courses of antibiotic and/or brucella antigen, by the fact that patients were kept under observation for long periods so that retreatment was promptly initiated, and the less virulent abortus strains predominated. Oxytetracycline was better tolerated than chlortetracycline, and the tolerance to chloramphenicol was intermediate. Avitaminosis and moniliasis were self-limited in most patients.

Cancer Research, Chicago

13:689-752 (Oct.) 1953. **Partial Index**

Free Amino Acid Content and Transaminase Activity of Lymphatic Tissues and Lymphosarcomas. S. Kit and J. Awapara.—p. 694.
Combination Chemotherapy of Cancer: Potentiation of Carcinostatic Action of 8-Azaguanine by a Riboflavin Analog. L. S. Dietrich and D. M. Shapiro.—p. 699.
Lack of Effect of High Potency Arginase on Tumor Growth. D. M. Greenberg and E. N. Sassenrath.—p. 709.
Metabolism of DBA Mouse Ascites Thymoma. H. B. Levy, H. M. Davidson, R. W. Reinhart and A. L. Schade.—p. 716.
Studies on Ehrlich Ascites Tumor: II. Oxidation of Hexose Phosphates. H. G. Williams-Ashman.—p. 721.
Transplantation of Shope Papilloma and Rous Sarcoma During Early Developmental Stages. H. S. N. Greene.—p. 726.
Nucleic Acid Content of Cells of Bone Marrow Aspirated from Patients with Leukemia. M. L. Menten and M. Willms.—p. 733.
Enhanced Tumor Transplantability Following Second Transplantation in Mouse of Original Strain. A. E. Casey and J. G. Casey.—p. 737.
*Metastatic Frequency of Spontaneous Mammary Carcinoma in Mice Following Biopsy and Following Local Roentgen Irradiation. S. Kaae.—p. 744.

Metastatic Frequency Following Irradiation or Biopsy.—Kaae of the Radium Center of Copenhagen studied the incidence of metastases following biopsy and following roentgen irradiation of spontaneous mammary carcinoma in DBA mice, inbred through more than 40 generations. The incidence of spontaneous mammary carcinoma is very high in females of this strain. The mice were divided into three groups. Those in group 1 were examined by biopsy with a rotating trephine under local anesthesia, usually when the tumor had reached the size of 8 to 10 mm. The mice in group 2 received local roentgen irradiation, usually when the maximum diameter of the tumor was 8 to 10 mm. During the irradiation of the tumor the remainder of the body was carefully shielded with lead. The biopsy group included 132 mice, the irradiated group 135, and the control group 92. It was found that irradiation with 1,000 to 2,000 r considerably increased the incidence of pulmonary

metastases, as compared to a control group (22.2% compared to 5.4%). This increased incidence of pulmonary metastases was due to only a small extent to a longer survival in this group, but primarily to a real increase in the metastatic tendency caused by the irradiation. Removal of biopsy specimens did not significantly increase the incidence of metastases (11.4% compared to 5.4% in the control group).

Endocrinology, Springfield, Ill.

53:345-464 (Oct.) 1953

Bio-Assay Method for Evaluation of Adrenocortical Potency by Means of Experimental Trauma, with Shock, in Rats. V. Schenker.—p. 345.
Plasma Protein-Bound Iodine After Intravenous Injection of Thyroxine in Thyroidectomized Dogs. L. W. O'Neal.—p. 358.
Demonstration of Storage and Release of Gonadotropin by Anterior Pituitary of Mouse During Gestation. A. J. Ladman and M. N. Runner.—p. 367.
Effect of Progesterone on Persistent Vaginal Estrus Produced by Hypothalamic Lesions in Rat. M. A. Greer.—p. 380.
Response of Pubic Symphysis of Mouse to Extracts of Pregnant Rabbit Serum and Pregnant Sow Ovaries and Its Application as Assay Method. B. Kliman, H. A. Salhanick and M. X. Zarrow.—p. 391.
Comparison of Response of Pubic Symphysis of Mouse and Guinea Pig to Extracts of Pregnant Sow Ovaries. B. Kliman, H. A. Salhanick, E. H. Frieden and F. L. Hisaw.—p. 403.
Influence of Adrenal Cortex and Cold Stress on Fasting Ketosis in Rat. J. L. Scott Jr. and F. L. Engel.—p. 410.
*Steroid Diabetes in Guinea Pigs: Effect of Cortisone Administration on Blood and Urinary Glucose, Nitrogen Excretion, Fat Deposition, and Islets of Langerhans. F. X. Hausberger and A. J. Ramsay.—p. 423.
Endocrine Influences on Renal Compensatory Hypertrophy. D. Rold and H. L. White.—p. 436.
Relation of Ascorbic Acid Nutrition to In Vitro Metabolism of Cortisone by Surviving Liver Tissue. H. Bacchus.—p. 441.
Liver Vitamin Content and Adrenal Cortical Function. F. G. Dhyse, G. R. Fisher, W. W. Tullner and R. Hertz.—p. 447.
*Effect of Thermal Burns on Thyroid Activity of Rat. A. W. Wase and E. Repplinger.—p. 451.

Steroid Diabetes in Guinea Pigs.—The 11-oxygenated corticosteroids and corticotropin are known to aggravate existing diabetes in humans and in rats, dogs, and cats. In normal rats, however, a steroid diabetes can be induced only by simultaneous force feeding. Hausberger and Ramsay report on cortisone diabetes in male guinea pigs with free access to food. The diabetes resembles in many respects Cushing's syndrome in man but differs from the steroid diabetes in force fed rats. The authors stress the following points: 1. Male guinea pigs receiving 2.5 mg. of cortisone acetate daily show after several days a partial degranulation of the beta cells and a considerable hypertrophy of the islets. 2. Ten to 50 mg. of cortisone daily produce in all animals an increased gain of body weight due to an augmented fat deposition, and glucosuria and hyperglycemia. The nitrogen balance is positive, or only slightly negative. The islets of the pancreas show an extraordinary hypertrophy. The number and size of beta cells is considerably increased, and loss of beta granulation takes place. If a severe diabetic condition is maintained for more than four weeks, a marked hydropic degeneration of many beta cells can be seen. After discontinuing the cortisone administration, the body weight decreases because of loss of fat, and the diabetes disappears slowly. The formerly enlarged and degranulated beta cells regain their normal size and appearance but the severely hydropic beta cells do not recover.

Effect of Thermal Burns on Thyroid Activity in Rats.—Decreased thyroid activity, measured as radioactive iodine (I^{131}) uptake, has been reported after the administration of various agents producing stress. Wase and Repplinger cite investigators who observed this in connection with the use of stress agents, such as vaccines, epinephrine, chemical agents, anoxia, abnormal nutritional states, corticotropin, and cortisone. Contradictory reports about the stress effect of burns on thyroid activity induced Wase and Repplinger to measure thyroid activity by means of uptake of radioactive iodine after deep thermal burns. The data obtained from these studies indicate that the stress of thermal assault depresses thyroid activity within four hours after burning. At this time burned rats took up 67% as much radioactive iodine as did the controls that were not burned. However, at 24 hours the burned animals took up 143% more iodine than controls; after 48 hours, 137%. There were indications that thermal burns initiate processes in the rat that effect thyroid I^{131} trapping activity by an initial depression followed by acceleration. This has been a general observation of the effects of many forms of stress.

Florida Medical Association Journal, Atlanta

40:293-362 (Nov.) 1953

Indications for Surgery in Treatment of Pulmonary Diseases. H. H. Seiler.—p. 307.
Cholesterol, Lipoproteins and Atherosclerosis: Present Concepts. D. Groom.—p. 315.
Adult Gaucher's Disease Complicated by Thrombocytopenia and Pregnancy. W. P. Logan.—p. 320.
Preliminary Survey and Analysis of 200 Consecutive Physical Examinations. G. W. Edwards II.—p. 323.
Retirement: When and When Not to Retire: Reflections of a Retired Physician. M. Golob.—p. 325.

Gastroenterology, Baltimore

25:113-320 (Oct.) 1953

SYMPOSIUM ON GASTRIC CARCINOMA

*Clinical Value of Gastrointestinal Cytologic Diagnosis. C. E. Rubin, B. W. Massey, J. B. Kirsner and others.—p. 119.
Familial Gastric Cancer. S. N. Maimon and M. M. Zinninger.—p. 139.

SYMPOSIUM ON GASTRIC AND DUODENAL ULCER

*Significance of Hormonal Factors in Pathogenesis of Peptic Ulcer. S. J. Gray, C. Ramsey, R. W. Reifenstein and J. A. Benson Jr. —p. 155.
Clinical Significance of Penetration and Confined Perforation in Peptic Ulcer Disease. W. S. Haubrich, J. L. A. Roth and H. L. Bockus. —p. 173.
*Multiple Gastric Ulcers: Their Occurrence in Benign and Malignant Lesions. J. A. Dolphin, L. A. Smith and J. M. Waugh.—p. 202.
Histological Changes in Gastric Mucosa During Digestion and Their Relationship to Mucosal Growth. R. Grant, M. I. Grossman and A. C. Ivy.—p. 218.
Studies on Bromsulfalein Excretion: II. Method for Simultaneous Performance of Bromsulfalein and Rose Bengal Excretion Tests. E. S. Cohen, J. E. Giansiracusa, L. A. Strait and others.—p. 232.
Id.: III. Simultaneous Performance of Bromsulfalein and Rose Bengal Excretion Tests in Individuals with Normal Hepatic Function. E. S. Cohen, J. E. Giansiracusa and T. L. Althausen.—p. 237.
Peritoneoscopy. G. J. Hegstrom, S. J. Zoeckler and P. G. Keil.—p. 243.
Relationship of Gastric Motility to Abdominal Pain in Hypothyroidism: Preliminary Report. J. A. Mendelson and G. M. Curtis.—p. 248.
Observations on Potential Differences of Human Stomach by New Electrode and Measuring System. P. W. Ingram and D. L. Richards. —p. 273.

Gastrointestinal Cytological Diagnosis.—In 300 patients whose gastrointestinal tract was examined by various cytological techniques during a two year period, the presence of benign or malignant disease was established by pathological examination or by clinical observation in 216 patients with lesions of the esophagus, stomach, pancreas, duodenum, and colon. These lesions were found initially in almost all the patients either by x-ray or by endoscopy. The authors were able with the aid of cytology to differentiate the benign from the malignant lesions in 196 patients (91%). Of the 196 patients, 93 had malignant lesions, and a correct cytological diagnosis was made in 76 (81%), while the remaining 17 carcinomas were not diagnosed by cytology. In 87 (94%) of the 93 patients the proved malignancies were diagnosed correctly by cytological methods combined with the initial x-ray examination. A correct cytological diagnosis was made in 120 (98%) of the 123 patients with benign lesions, while benign lesions were erroneously diagnosed as malignant in three, the only false positive diagnoses in the entire cytological series. All diagnostic methods combined, including x-ray, endoscopy, and clinical findings, yielded an accuracy of 100% in the group with benign lesions. The technical requirements for successful cytodiagnosis of the gastrointestinal tract are described in detail. New methods are presented including the antral abrasive balloon and chymotrypsin lavage for the cytological examination of the stomach and the magnetic positioned enema for the cytological examination of the colon. In the search for gastrointestinal malignancy, the history and physical examination may suggest the diagnosis. X-ray examination and endoscopy usually locate the lesion. The important contribution of the exfoliative cytological method is the more precise differentiation between benign and malignant lesions.

Hormonal Factors in Pathogenesis of Peptic Ulcer.—Gray and associates studied the effect of chronic stress situations on gastric acidity, gastric pepsin, and the excretion of uropepsin particularly in patients with vagotomy and antral resection (subtotal gastrectomy). The types of stress included (1) emotional (fear and anxiety), (2) physical stress (surgical procedures, pain, and trauma), and (3) the stress simulated by the administration of corticotropin or the adrenal corticoids. Epigastric pain during hormone stimulation and physical stress were evaluated in patients whose vagus nerve was intact as well as in those with successful vagotomies and gastric antral resections. Normal persons as well as patients with duodenal ulcer, gastric ulcer, and marginal ulcer were studied. The administration of corticotropin and cortisone over a period of days or weeks induced an increase in the basal and nocturnal gastric secretion of hydrochloric acid and pepsin approximating 200% with a similar concomitant increase in uropepsin excretion. Patients with epigastric distress during hormone therapy or with a peptic ulcer, reactivation of a previous ulcer, hemorrhage, or perforation demonstrated a coincident peak uropepsin excretion and an increased gastric acid and pepsin secretion in the ulcer range. Vagotomy, methantheline (Banthine) bromide, or atropine did not appear to alter the gastric acid, pepsin, and urinary uropepsin response to adrenal stimulation or stress. Removal of the gastric antrum did not alter the response of the stomach to corticotropin or stress. The uropepsin excretion in the urine appeared to be an accurate measurement of gastric pepsin secretion. Stimulation of the hypothalamus in dogs produced significant increases in uropepsin excretion. Patients with hypopituitarism and hypoadrenal function (Addison's disease) showed low uropepsin excretion. Patients with adrenal and pituitary hyperactivity excreted increased amounts of uropepsin. Although the gastric response to stress is undoubtedly mediated through the vagus nerve, there appears to be an additional hormonal mechanism that is intimately associated with the adrenal gland and the general adaptation syndrome. The authors' studies suggest that chronic emotional and physical stress stimulate the stomach to secrete increased acid and pepsin by way of a humoral mechanism involving the hypothalamic-pituitary-adrenal-gastric axis independent of the vagus nerve or the gastric antrum. There appear to be significant hormonal influences in addition to neural stimuli in the pathogenesis of peptic ulcer that may explain the mechanism by which ulcers may recur in patients whose vagus nerves have been satisfactorily severed.

Multiple Gastric Ulcers.—In 721 of the 1,552 cases of total and subtotal gastrectomy performed at the Mayo Clinic for lesions of the stomach between 1946 and 1950, the lesions were benign (ulcers), and in the remaining 831 cases the lesions were malignant. Specimens representing nonulcerative gastritis and gastric erosions were excluded. Multiple ulcers were found in 157 (21.9%) of the 721 patients with benign lesions, and in 37 (5.6%) of the 660 cases of ulcer among the 831 malignant specimens, the percentages being in a ratio of approximately 4:1.

J. Am. Geriatrics Society, Baltimore

1:671-744 (Oct.) 1953

Relation of Physiologic Aging to Physical Medicine. M. W. Thewlis. —p. 671.
The Aging Skin. R. R. Kierland and P. A. O'Leary.—p. 676.
Surgical Treatment of Non-Malignant Disease of Biliary Tract in Patients 65 Years of Age and Older. F. Glenn and D. M. Hays. —p. 684.
Diagnosis of Retroperitoneal Tumors. C. C. Guy and W. A. Wichowski. —p. 701.
Application of Plastic Surgical Principles to Treatment of Cancer. B. Cannon and J. E. Murray.—p. 715.
Some Problems Presented by Head Injuries in Older People. J. P. Evans. —p. 723.
Tumors of Ocular Structures in the Adult. B. F. Payne.—p. 730.
Fear in Elderly People. P. Williamson.—p. 739.

Journal of Experimental Medicine, New York

98:399-520 (Nov.) 1953. Partial Index

Inhibition of Theiler's Encephalomyelitis Virus (GDVII Strain) of Mice by an Intestinal Mucopolysaccharide. B. Mandel and E. Racker. —p. 399.
Acute Hepatitis Associated with Mouse Leukemia. J. B. Nelson.—p. 433.
Estimation of Circulating Antibody-Antigen Complex. L. A. Sternberger, F. Maltaner and J. DeWeerdt.—p. 451.
Study of Illness in Group of Cleveland Families: VII. Transmission of Acute Non-Bacterial Gastroenteritis to Volunteers: Evidence for Two Different Etiologic Agents. W. S. Jordan Jr., I. Gordon and W. R. Dorrance.—p. 461.
Studies on Pathogenesis of Fever: I. Effect of Injection of Extracts and Suspensions of Uninfected Rabbit Tissues Upon Body Temperature of Normal Rabbits. I. L. Bennett Jr. and P. B. Beeson.—p. 477.
Studies on Pathogenesis of Kernicterus with Special Reference to Nature of Kernicteric Pigment and Its Deposition Under Natural and Experimental Conditions. F. S. Vogel.—p. 509.

Journal of Immunology, Baltimore

71:169-260 (Oct.) 1953. Partial Index

Studies on Specific Soluble Proteins of Pasteurella Pestis and P. Pseudotuberculosis: II. Complement-Fixing and Immunogenic Properties. S. C. Seal.—p. 169.
Performance of Mumps Neutralization Tests in Suckling Mice. L. Kilham, H. W. Murphy and J. R. Overman.—p. 183.
Protective Effect of Sera from Animals Treated with Different Brucella Antigens upon Brucella Infection in Mice. I. Live and L. A. Giuliani. —p. 187.
Serologic Studies on North American Blastomycosis: Studies with Soluble Antigens from Untreated and Sonic-Treated Yeast-Phase Cells of Blastomyces Dermatitidis. D. S. Martin.—p. 192.
Effect of X-Irradiation on Immunity of Mosquitoes to Malarial Infection. L. A. Terzian.—p. 202.
Preparation and Properties of Cold Hemagglutinin. R. S. Gordon Jr. —p. 220.
Capillary Agglutination Test for Bovine Q Fever. L. Luoto.—p. 226.
Serotypic Recombination in Salmonella. J. Lederberg and P. R. Edwards. —p. 232.
Studies of Interference Phenomenon in Mustard-Treated Hosts. J. Fong, R. Louie and S. S. Margherita.—p. 246.
Influenza Virus Multiplication in Homologously Transplanted Mouse Fetal Tissues. R. R. Wagner.—p. 253.

New England Journal of Medicine, Boston

249:635-672 (Oct. 15) 1953

*Observations on Use of Cortisone and ACTH in Rheumatoid Arthritis. W. S. Clark, H. O. Tonning, J. P. Kulka and W. Bauer.—p. 635.
Modern Concepts in Treatment of Otitis Media. B. Zonderman.—p. 643.
Approach to "Skid Row" Problem in Boston. D. J. Myerson.—p. 646.
Enzymes in Clinical Medicine: Recent Developments in Practical Application of Enzymes to Clinical Medicine. H. J. Tagnon.—p. 650.
Mid-Thigh Amputation in Patient with Hemophilia. J. H. Crandon, L. Staudinger Jr. and E. Friedman.—p. 657.

Cortisone and Corticotropin in Rheumatoid Arthritis.—Clark and associates describe observations on the use of cortisone and corticotropin in 52 patients with rheumatoid arthritis. Thirty-four patients received cortisone and 10 corticotropin alone; 8 were given both hormones, but on separate occasions. Thus 42 patients received cortisone and 18 corticotropin. The dosage of cortisone varied, initial high doses being used only in the early period. Lower starting doses, ranging between 100 and 150 mg. a day, were more satisfactory. Very low initial doses, followed by increasing amounts until improvement resulted, were unsatisfactory in that therapeutic objectives were unnecessarily delayed. Maintenance doses of cortisone varied in relation to therapeutic objectives and side-effects. A maintenance dose was considered the amount of hormone that, in addition to conservative measures, produced subjective and functional improvement of a degree permitting a substantial increase in both comfort and functional capacity. Although a minimum of 75 mg. a day was required for complete vocational rehabilitation, subjective and functional improvement was noted in several patients on lower dosage. After the initial reduction acetylsalicylic acid (aspirin) was resumed in full doses. When symptoms became stabilized with a dose of 100 mg. a day in addition to acetylsalicylic acid, cortisone was again reduced by 12.5 mg. every two or three weeks to the lowest level at which substantial improvement could be maintained. Similar principles applied to the use of corticotropin in determining initial and maintenance doses. Initial doses of 60 to 80 mg. a day were satisfactory. It was found that cortisone and corticotropin can favorably alter the manifestations

of rheumatoid arthritis. The most impressive response is a decrease in pain and stiffness and in consequence an improved functional status. Objective improvement is generally less than subjective improvement. Some histological evidence of joint inflammation persists even after long-term therapy in doses sufficient to produce hypercorticism. Progression of the disease can occur under adequate hormone therapy as evidenced by x-ray examination. All patients do not respond favorably. Hormone therapy should not be employed until maximum benefit from conservative measures has been established and should always be combined with such measures. The total improvement that accrues is frequently a direct result of rehabilitation procedures facilitated by the hormones. There is as yet no evidence that either agent alters the remission rate or the natural course of rheumatoid arthritis. The hazards of hormone therapy include not only those directly associated with hypercorticism but also psychological reactions that lead to a failure to adhere to conservative measures of proved value in the treatment of arthritis.

New Jersey Medical Society Journal, Trenton

50:443-486 (Oct.) 1953

Anatomy of Veins of Human Heart with Special Reference to Normal Anastomotic Channels. V. Parsonnet.—p. 446.
Glaucomato-Cyclitic Crises: Report of Two Cases. J. L. Harris.—p. 453.
Evaluation of Certain Newer Products in Arthritis Therapy. J. W. Gray and E. Z. Merrick.—p. 456.
Beriberi Heart Disease. M. C. Becker, A. Yaguda and E. J. Tyrrell. —p. 462.
Postoperative Urinary Suppression: New Concepts of Cause and Treatment. S. E. Kramer and B. M. Kramer.—p. 468.
Carotid Sinus Syndrome. J. G. Rogers.—p. 473.

New York State Journal of Medicine, New York

53:2141-2272 (Oct. 1) 1953

Observations Regarding Therapy of Bleeding Peptic Ulcer. A. P. Ingegno. —p. 2187.
Emergency Treatment of Bleeding Esophageal Varices and Results of Portacaval Shunts in 90 Patients. R. R. Linton.—p. 2192.
Long-Range Evaluation of Modern Methods in Treatment of Chronic Ulcerative Colitis. Z. T. Bercovitz.—p. 2200.
Treatment of Hepatic Tumors. G. T. Pack and T. R. Miller.—p. 2205.
Diagnosis and Treatment of Polyps of Rectum and Colon. A. D. Hennessy.—p. 2208.
Hypobaric Sacral Anesthesia for Anorectal Surgery. E. Granet and E. J. De Polo.—p. 2211.
Newer Concepts in Treatment of Severe Burns. W. L. Estes, Jr.—p. 2217.
Abuses and Uses of Antibiotics. P. H. Long.—p. 2222.
Neurology in General Practice. W. B. Hamby.—p. 2225.
Detection of Early Signs of Heart Disease in General Practice. E. Hochstein.—p. 2227.
Value of Cod Liver Ointment and Cod Liver Oil Lotion in Treatment of Dermatoses. H. G. Grayzel, C. B. Heimer and R. W. Grayzel. —p. 2233.
Treatment of Refractory Acne with Fractionated Type of Liver Extract. N. Pensky and N. Goldberg.—p. 2238.
Surgical Treatment of Dysmenorrhea. L. K. Stalker.—p. 2240.

Plastic & Reconstructive Surgery, Baltimore

12:225-302 (Oct.) 1953. **Partial Index**

*Misuse of Prolabium in Repair of Bilateral Cleft Lip. W. M. Adams and L. H. Adams.—p. 225.
Study of Revascularization of Stored Homologous Bone Grafts by Means of Radioactive Phosphorus. C. L. Kiehn and D. M. Glover.—p. 233.
Fluid Therapy in Plastic Surgical Patient. F. L. Ashley and H. G. Love. —p. 241.
Pediatric Care of Burned Children. A. H. Hurd.—p. 260.
Experiences with ACTH in Treatment of Burns. G. W. Pierce and E. H. Klabunde.—p. 265.
Behavior of Split Thickness and Dermal Skin Grafts in Peritoneal Cavity: An Experimental Study. C. Horton, N. Georgiade, F. Campbell and others.—p. 269.
Artificial Urethra Constructed from Bladder Flap: Preliminary Report. B. W. Young and R. L. Mills.—p. 279.
Complete Cross-Filing System for Plastic Surgery Clinic. W. M. Adams, L. H. Adams and A. R. Vinicoff.—p. 285

Misuse of Prolabium in Repair of Bilateral Cleft Lip.—This report demonstrates that in repairing bilateral cleft lip in infants, a choice must be made between a procedure wherein the prolabium is utilized to construct the columella and one wherein the prolabium is used to form the central portion of the lip. The first of these procedures gives a well-formed nose and lip. Ultimately, however, the lip becomes so elongated that it requires a shortening operation. The use of the prolabium to form the entire central portion of the lip is preferable. The tip of the nose may continue to be flattened, though this deformity is less serious than the elongation of the lip and is more easily corrected after the child acquires an adult face. It would be desirable to combine the virtues of these two methods, but, since this is impossible, it is better to forego a nice immediate cosmetic result in favor of a superior ultimate result. From an experience covering 12 or 15 years, the authors are convinced that the prolabium should be used in its entirety in reconstruction of the cleft lip. The use of the prolabium in the formation of the columella gives consistently poor results.

Psychosomatic Medicine, New York

15:371-562 (Sept.-Oct.) 1953. **Partial Index**

Emotional Elevations of Blood Pressure in Trained Dogs: Possible Relation to Origin of Hypertension in Humans. C. M. Wilhelmj, T. F. McGuire, J. McDonough and others.—p. 390.
Role of Olfaction in Normal and Neurotic Behavior in Animals: Preliminary Report. J. H. Masserman and C. Pechtel.—p. 396.
Experiments in Substitution of Symptoms by Hypnosis: II. P. F. D. Seitz.—p. 405.
Some Patterns of Somatic Displacement. J. G. Kepecs.—p. 425.
Sympathetic Activity and Perception: Approach to Relationships Between Autonomic Activity and Personality. E. Callaway III and S. V. Thompson.—p. 443.
Psychophysiological Responsiveness to Psychological Stress in Early Chronic Schizophrenic Reactions. M. Williams.—p. 456.
Characteristics of Psychoneurotic Patients and Their Families as Revealed in General Morbidity Study. J. Downes and K. Simon.—p. 463.
Nutritional Anemia in Children: Importance of Emotional, Social, and Economic Factors. G. H. Pollock and J. B. Richmond.—p. 477.
Some Emotional Factors in Infertility. T. Benedek, G. C. Ham, F. P. Robbins and B. B. Rubenstein.—p. 485.
Pruritus Ani: Psychiatric Study. I. Macalpine.—p. 499.
Gastric Acidity and Normaliy Produced Anxiety. M. H. Heller, J. Levine and T. P. Sohler.—p. 509.
Chronic Ulcerative Colitis: Effect of Specific Psychotherapeutic Measure. C. G. Craddock Jr.—p. 513.

Public Health Reports, Washington, D. C.

68:921-1020 (Oct.) 1953. **Partial Index**

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Treatment of Tuberculosis. J. B. Amberson.—p. 928.
Report of Case of Rat-Bite Fever Due to S. Moniliformis. R. L. Griffith and D. W. McNaughton.—p. 947.
*Sanitary Quality of Crushed and Cubed Ice as Dispensed to Consumer. V. D. Foltz.—p. 949.
Public Health Laboratory: Yesterday, Today, and Tomorrow. A. V. Hardy.—p. 968.
Mapping a Program of Public Health for Ethiopia and Eritrea. H. R. O'Brien.—p. 976.
Epidemiological Study of Plantar Warts Among School Children. W. K. Grigg and G. Wilhelm.—p. 985.
Program for Protection of Research Employees Against Pathogenic Hazards. J. Black, J. M. Lynch and I. Ladimer.—p. 989.
Trend of Multiple Cases of Poliomyelitis in Household Units. M. Siegel and M. Greenberg.—p. 996.

Sanitary Quality of Crushed and Cubed Ice.—Sanitarians have formulated standards of quality for commercial ice and have introduced regulations covering items such as (*a*) the water supply used, (*b*) the plumbing and toilet facilities of the premises and surrounding area, and (*c*) the employees' health. If such regulations are adhered to, the ice (usually in 300 lb. [136.2 kg.] cakes) should be of high sanitary quality when pulled from the freezing tanks. The cake ice in the area covered by the studies described in this report is of high quality. No coliform or clostridia organisms were detected, and the average standard plate count for the 10 samples was only 6.8 per milliliter of water. This paper reports more detailed studies of the sanitary quality of both crushed and cubed ice. Samples of ice were collected from hotels, restaurants, soda fountains, hospitals, and soft-drink parlors in central Kansas. They include 77 samples of crushed ice and 37 samples of ice from automatic ice cube machines. Only 10 (13%) of the 77 samples of commercial crushed ice were found to be free of coliform bacteria, and 17 (46%) of the 37 samples of cubed ice were free of coliform organisms. The dominant coliform types isolated from the 87 samples giving positive and doubtful presumptive tests were Escherichia coli from 41 samples and Aerobacter aerogenes

from 46. In some samples only one type of the coliform group appeared to be present; but in the majority of the samples a mixture was observed. It appears that most of the microorganisms found in crushed ice when it reaches the consumer have gained entrance at one or more points between the freezer and the consumer. Even a casual examination of the average ice plant and other facilities for handling ice will indicate many possible points of contamination. The fact that ice from automatic freezers in hospitals was found to be sanitary whereas most of that from machines in retail establishments was found to be of poor sanitary quality indicates an absence of sanitary precautions in machine care and in dispensing techniques in the latter. It is hoped that the facts presented will stimulate additional research on the relative significance of the many factors contributing to the poor quality of crushed and cubed ice.

Rhode Island Medical Journal, Providence

36:481-552 (Sept.) 1953

Bronchiectasis. O. C. Brantigan.—p. 499.
Medicine and the Bible. L. A. M. Krause.—p. 507.
Diagnosis and Treatment of Lesions of Shoulder. D. M. Bosworth. —p. 512.

Rocky Mountain Medical Journal, Denver

50:843-916 (Nov.) 1953

Presidential Address. C. D. Bonham.—p. 865.
Retiring President's Address. K. B. Castleton.—p. 870.
Spinal Nerve Root Pain. T. R. Love.—p. 873.
Diabetic Lipemia: Clinical Significance of Newer Knowledge. B. Phibbs. —p. 876.
Antibiotics—Their Use and Abuse. J. F. Waldo.—p. 879.

Surgery, Gynecology and Obstetrics, Chicago

97:529-652 (Nov.) 1953

Intra-Arterial and Intravenous Transfusion: Controlled Study of Their Effectiveness in Treatment of Experimental Hemorrhagic Shock. J. V. Maloney Jr., C. M. Smythe, J. P. Gilmore and S. W. Handford. —p. 529.
Experimental Study of Treatment of Whole Thickness Burns Complicated by Open Fracture. H. S. Allen, J. L. Bell and S. W. Day.—p. 541.
Treatment of Fractures Complicated by Contiguous Burns: Experimental Study in Dogs. W. T. Fitts Jr., B. Roberts, W. J. Grippe and others. —p. 551.
Intussusception Ureterectomy: Method of Removal of Ureteral Stump at Time of Nephrectomy Without Additional Incision. D. F. McDonald. —p. 565.
*Bilateral Total Adrenalectomy in Patients with Metastatic Carcinoma. H. Krieger, W. E. Abbott, S. Levey and L. Babb.—p. 569.
Construction and Reconstruction of Vagina. H. Conway and R. B. Stark. —p. 573.
Beta-Glucuronidase Studies in Women: VI. Premenopausal Vaginal Fluid Values in Relation to Invasive Cervical Cancer. S. C. Kasdon, F. Homburger, E. Yorshis and W. H. Fishman.—p. 579.
*Cystectomy for Carcinoma of Urinary Bladder. F. A. Lloyd and G. Baumrucker.—p. 584.
Surgical Significance and Management of Pathologic Blood Clotting. G. H. Pratt.—p. 589.
Studies of Hemodynamic Changes in Humans Following Induction of Spinal Anesthesia: IV. Observations in Low Spinal Anesthesia During Surgery. S. M. Sancetta, R. B. Lynn, F. A. Simeone and others. —p. 597.
Treatment of Inguinal Hernia in Infancy and Childhood. G. B. Packard and C. H. McLauthlin.—p. 603.
Symptomatology and Management of Prostatic Calculi. D. Presman. —p. 608.
Infrared Phlebogram in Diagnosis of Breast Camplaints: Analysis of 1,200 Cases. L. C. Massopust and W. D. Gardner.—p. 619.
Careinoma of Male Urethra: One Stage Surgical Treatment by Radical Perineal Excision and Rectal Transplantation of Divided Trigone. J. J. Kaufman and W. E. Goodwin.—p. 627.
Experimental Repair of Exstrophy of Bladder Without Cystectomy by Using Free Fascial Graft. A. C. Baret, W. E. DeMuth Jr., J. J. Murphy and M. W. Muir.—p. 633.

Bilateral Total Adrenalectomy for Metastatic Carcinoma.—The rationale for bilateral adrenalectomy in metastatic carcinoma is based on both clinical and experimental observations. The growth of both breast and prostatic carcinoma is influenced by alteration of the sex hormone pattern, and hormones have been used with some success in metastatic carcinoma of the breast and prostate. The relapse that occurs in patients who have been castrated or have received hormone therapy is thought to be the result of androgen production by the adrenal cortex. It has been demonstrated that patients with cancer excrete abnormal amounts of steroids in the urine. The present report is based on data obtained from five patients with metastatic carcinoma. Three had carcinoma of the breast; one had carcinoma of the prostate with skeletal metastases; and one had widespread melanosarcoma. The patients were admitted to the metabolic division of University Hospitals of Cleveland and were studied both preoperatively and postoperatively. Other more accepted forms of therapy had been or were tried prior to performing total adrenalectomy. A brief description of the technique of adrenalectomy is presented. The operation was well tolerated by all the patients and after the first few postoperative days, other than the administration of cortisone, they were managed like any postoperative patient. The profound metabolic changes that follow bilateral adrenalectomy quickly reverted to normal under adequate cortisone therapy. The usual maintenance need of cortisone was found to be 25 mg., twice a day, although different patients received from 37.5 to 75 mg. daily in divided doses. Whenever these patients are subjected to added stress such as infection, injury, or further operations it is necessary to increase the cortisone dosage. The patients with metastatic carcinoma of the breast demonstrated for varying periods an increased feeling of well being, increased appetite, and relief of pain. Objective improvement is best demonstrated by correction of negative calcium balance and hypercalcemia. These changes persist for varying periods of time. Adrenalectomy had no demonstrable influence on the clinical course of the patient with melanosarcoma.

Cystectomy for Carcinoma of Urinary Bladder.—Lloyd and Baumrucker during the years 1945 to 1952 treated 402 patients with carcinoma of the urinary bladder at the Veterans Administration Hospital, Hines, Ill. They performed 50 cystectomies and carried out diversion of the urine without removing the bladder in an additional 36. Although some of these patients are too recently treated for a five year follow-up, the authors feel that an objective appraisal of the results at this time may be of some value. Of the 50 patients who underwent cystectomy, 38 died, 29 during the first year, 3 each during the second and third years, 1 during the fourth, and 2 during the fifth year. Of the 12 who are still alive, only three have so far lived longer than 5 years. Total cystectomy is a trying ordeal for the patient, and it is often accompanied by severe morbidity, and a prolonged convalescence. Although the immediate mortality is not high the long-term survival rate is low. Chronic pyelonephritis resulting from ureterosigmoidostomy is the most important cause of death. This may occur regardless of the skill of the operator or the technique employed. Cutaneous ureterostomy is safer, but it is messy, difficult to take care of, and not devoid of complications. The removal of the urinary bladder offers a prospect of cure only if it is done very early in the course of the disease. But performed at this stage the accompanying diversion of the urine carries with it such a high morbidity and ultimate mortality that the patient will survive far longer and in far greater comfort if he is treated by more conservative means. Until a safer and more satisfactory method of diversion of the urine is devised, expanding the scope of the operation will do little if anything to improve the long term survival rates. Cystectomy is not justified as a palliative procedure in advanced carcinoma of the urinary bladder. It should be reserved for those cases in which no other form of treatment offers a prospect of relief.

U. S. Armed Forces Med. J., Washington, D. C.

4:1543-1666 (Nov.) 1953. **Partial Index**

New Anticoagulant for Routine Laboratory Procedures: Comparative Study. C. H. Schmidt, M. E. Hane and D. C. Gomez.—p. 1556.
Psychiatry in Korean Campaign: Historical Review. A. J. Glass.—p. 1563.
Chronic Diarrhea: Clinical and Laboratory Study of 39 Cases. H. Kraus. —p. 1584.
Penicillin-Streptomycin Bone Bank. R. W. Augustine, W. E. Landmesser Jr., F. D. O'Brien and others.—p. 1587.
Cross Resistance of Bacteria to Antibiotics. M. H. Fusillo and D. M. Kuhns.—p. 1600.
Reactions to Penicillin Gixen Orally in Mass Prophylaxis. C. B. White. —p. 1606.
Prevention of Airsickness During Training Flights. H. I. Chinn, B. A. Strickland Jr., O. H. Waltrip and J. D. McGeary.—p. 1609.
Hypertension and Diabetes Detection Program. F. P. Keaney, J. G. Stubenbord, M. M. McLean and F. A. Bove.—p. 1613.

FOREIGN

Anales de la Facultad de Medicina, Montevideo

38:163-232 (May-June) 1953. **Partial Index**

*Encephalomyelitis in Course of Arsenical Therapy. R. A. Piaggio Blanco, H. Malosetti, L. Perez Achard and A. Ferrari Forcade.—p. 163.
Periarteritis Nodosa. J. C. Pla, G. Fernández, M. Tornaria and Others. —p. 171.
Spontaneous Cerebellar Hematoma. Surgical Therapy. M. Ferrari, R. Arana Iñiguez, R. Nin and O. Etorena.—p. 179.
Surgical Treatment of Mitral Stenosis. A. Sanjinés Bros, L. Correa and J. Mendivil.—p. 199.

Encephalomyelitis from Arsenic Therapy.—Encephalomyelitis from arsenic therapy is extremely rare, but relatively less rare in young adults, pregnant women, and patients with asymptomatic syphilis. The prognosis is grave. The subject of this report is a 31-year-old woman, the mother of two normal children. A positive Wassermann reaction was noted in the course of her third pregnancy. In the fifth month of pregnancy, she was given two injections of neoarsphenamine at an interval of five days. Two days after the second injection, a typical arsenical encephalopathy developed. The neurological symptoms were acute and in agreement with the changes of the electroencephalogram. Treatment consisted in administration of cortisone. In the first stage of cortisone treatment, the marked clinical improvement of the patient paralleled regression of abnormal tracings in the electroencephalogram. In the second stage of treatment, the clinical improvement of the patient progressed uninterrupted whereas the electroencephalographic tracings were still disturbed. Upon control of the neurological symptoms and discontinuation of cortisone treatment, the neurological symptoms continued under permanent control and the electroencephalographic tracings became normal. The pregnancy terminated in the delivery of a normal child at full term. The authors believe that in the case reported the parallel improvement of the neurological symptoms and regression of abnormal tracings in the electroencephalogram during the first stage of the treatment constitute proof of the therapeutic value of cortisone in arsenical encephalomyelitis. Persistent disorders of the electroencephalographic tracings after control of neurological symptoms showed a normal reaction of the cerebral cortex to cortisone; this reaction is more marked in pregnant women. The tracings became normal as soon as the cortisone cortical reaction was not elicited on discontinuation of the treatment.

Archiv für klinische Chirurgie, Berlin

277:117-244 (No. 2) 1953. **Partial Index**

*Experimental Studies on Pathogenesis of Osteomyelitis. G. Grundmann. —p. 117.
Hepatorenal Syndrome in Surgical Diseases of Gallbladder and Its Pathogenesis. D. Soyka.—p. 143.
Osteofibrosis Deformans in Juvenile Patients and Its Differential Diagnosis. H. Hellner.—p. 160.
Resection of Lung in Patients with Bronchial Carcinoma in Seventh Decade of Life. R. H. Jenny.—p. 190.
*Gastrectomy in Patients with Gastroduodenal Ulcer: Report on 1,535 Resections. H. Berger and H. Reissigl.—p. 223.

Pathogenesis of Osteomyelitis.—According to Grundmann, acute hematogenous osteomyelitis is an infectious disease and presents the third phase of a cycle extending from local infection through generalization to organic manifestation. The dissemination of the pathogenic agents from the primary focus occurs continuously and in small amounts and results in a change of the cells of the organism of the host. The reaction of this organism to the first invasion of the pathogenic agents differs from that to repeated invasion of these agents while the organism of the host passes through three stages, namely, incubation, hyperergy, and immunity. Depending on the condition of the reaction, various aspects of the disease may be associated with the same amount of pathogenic agents of the same virulence extending from the highly acute and rapidly fatal generalized infection to the chronic infection. Osteomyelitis is only a specific form of generalization. Localized persistence of the pathogenic agents in the bone marrow constitutes the problem of the genesis of osteomyelitis. The author succeeded in producing osteomyelitis in rabbits by eliciting in the bones a hyperergic reaction. The animals that had been sensitized with a Micrococcus (Staphylococcus) vaccine were exposed to ultrasonics directed toward the region of the head of the tibia and the proximal portions of radius and ulna, followed immediately by the intravenous injection of an eliciting dose of micrococci. A localized osteomyelitis was thus produced without gross trauma in the sensitized rabbits at a previously determined area with a definite dose of infectious substance, constant virulence of the pathogenic agents, a determined stimulus, and a certain condition of reaction that was established by the precipitin reaction. The time of the dissemination of the pathogenic agent is important. Persistence of massive and virulent doses of the pathogenic agent may occur in every stage of the allergy. A certain behavior of the terminal vessels of the metaphyses of the bones is required for the adherence of the pathogenic agents. Peristasis and stasis are instrumental in slowing of the blood flow and in hyperemia; they permit prolonged and increased persistence of the pathogenic agents in the blood vessels; they also cause passage of the pathogenic agents through the vascular walls the permeability of which has been changed. Depending on the condition of the reaction a more or less strong stimulus is required for eliciting peristasis or stasis. In the hyperergic stage the circulation shows an increased tendency to reaction. In the state of hyperergy, the smallest stimuli, also occasional trauma, are sufficient to cause peristasis and stasis at the area to which force is applied, i. e., the bone marrow. Summation of stimuli is presented by hyperergy, repeated invasion of the blood vessels by the pathogenic agents, and by local trauma. The reaction of the changed, hyperergic endothelium of the capillaries and the tissues to the prolonged and increased persistence of the pathogenic agents in the blood vessels is described as abnormal because the still immature protective measures of the organism are inopportunely mobilized. Thus osteomyelitis becomes manifest. Many additional factors beside the allergic-hyperergic component contribute to the disease aspect of osteomyelitis. The properties of the pathological agents are responsible for the pattern of the course of the disease. Fluctuations in the immunological condition may change the tendency to reaction in the terminal blood vessels and in the tissues. Nutrition, trauma, and climate are some of the eliciting exogenous factors; age and sex are endogenous factors. Persons with abnormal blood perfusion caused by various influences are predisposed to osteomyelitis, since in them a weak stimulus is sufficient to cause persistence of the pathogenic agents in the bone marrow.

Gastrectomy for Gastroduodenal Ulcers.—At the surgical clinic of the University of Innsbruck, Austria, 1,535 patients with gastroduodenal ulcers underwent gastrectomies between 1934 and 1952. Thirty-three of the 1,175 patients whose ulcers were not complicated by hemorrhage or perforation died, a mortality rate of 2.8%. Billroth 2 gastric excision, as modified by Reichl, was carried out in most of the patients, and Finsterer's advice was taken in removing two-thirds to three-fourths of the stomach. Exclusion gastrectomy without preservation of the pylorus was performed in 331 patients, 8 of whom died, a mortality rate of only 2.4%. The authors, therefore, do not agree with other workers that exclusion gastrectomy with preservation of the pylorus is associated with less risk than that without. Early resection is the method of choice for ulcers complicated by massive hemorrhage and for recurrent bleeding ulcers, while primary resection is indicated in perforating ulcer with a long history of gastric disturbance. The authors strongly emphasize that late complications, such as bleeding and repeated bleeding, perforation and repeated perforation, malignant degeneration and additional fatalities resulting from late operations for persistent ulcers associated with severe disturbances, are responsible for the unfavorable results revealed by all the statistics on conservative treatment and palliative surgical intervention respectively. Better results of late resection for bleeding ulcers may be obtained by adequate preoperative and postoperative treatment and by improved anesthesia and sufficient blood transfusions. Preoperative x-ray examination of the gastrointestinal tract should be omitted in patients with bleeding ulcer in view of the unreliable findings resulting from the frequent coagulation of the blood in the ulcer niche. Supportive

treatment of heart and circulation is imperative. Preoperative evacuation with the stomach tube is required in patients with stenosis of the pylorus associated with uncomplicated peptic ulcer. In these patients residual amounts of contrast medium from the last x-ray examination of the gastrointestinal tract should be removed preoperatively to prevent delay in normal postoperative intestinal peristalsis. Patients were kept in bed until the ninth postoperative day, and drugs stimulating peristalsis were not instituted before the fourth postoperative day.

British Heart Journal, London

15:369-480 (Oct.) 1953

Mechanism of Sudden Death in Dissecting Aneurysm with Intracardiac Rupture. A. Pick and G. Mininni.—p. 369.
Observations Relating to Aetiology of Patent Ductus Arteriosus. R. G. Record and T. McKeown.—p. 376.
Plasma Lipids in Coronary Artery Disease. M. F. Oliver and G. S. Boyd. —p. 387.
Clinical and Radiological Assessment of Pulmonary Arterial Pressure in Mitral Stenosis. L. G. Davies, J. F. Goodwin, R. E. Steiner and B. D. Van Leuven.—p. 393.
*Laevocardia with Transposition of Abdominal Viscera. M. Campbell and P. Forgacs.—p. 401.
Patent Ductus Arteriosus with Pulmonary Hypertension. J. A. Cosh. —p. 423.
Electrocardiogram on First Day of Life. I. Kessel.—p. 430.
Left Auricular Appendage in Mitral Stenosis. F. McKeown.—p. 433.
*Use of Pure Veratrum Alkaloids Neogermitrine and Protoveratrine in Hypertension. A. E. Doyle and F. H. Smirk.—p. 439.

Levocardia with Transposition of Abdominal Viscera.—Campbell and Forgacs describe 14 cases of congenital heart disease with transposition of the abdominal viscera but with levocardia, and they compare them with 19 similar cases that have been reported recently. In a lesion of such complexity, only the 10 with necropsies can provide full details of the anatomic changes; but including these there are 10 of their own cases and 14 others that have been investigated, generally by angiocardiography and by cardiac catheterization. These 24 have been analyzed and form the basis of the discussion. The patients in these cases fall into two groups (*a*) those in whom the superior vena cava and venous atrium are on the left, i. e., transposed with the abdominal viscera, and (*b*) those in whom the venous atrium is on the right as normally, but in whom cyanosis and disability are due to the associated defects. The conclusion of Forgacs in 1947 that congenital heart disease is the rule in this type of heterotaxy is confirmed, as is the transposition of the atriums in the former group, but the assumption that transposition of the atriums is the fundamental cause of the other defects is no longer tenable. In those with the venous atrium transposed to the left, the P-wave in lead 1 is inverted, and there is generally a single superior vena cava, also transposed to the left, and a right-sided aortic arch. As a rule, the aorta and pulmonary trunk are transposed, but this adaptation is rendered ineffective by the presence of septal defects and pulmonary stenosis or atresia. In those with the venous atrium on the right as normally, the P-wave in lead 1 is generally upright, and there is often a superior vena cava on both sides, the left generally entering the right atrium through the coronary sinus. The aortic arch may be on either side. As in the first group, the aorta and pulmonary trunk are often transposed, and there are atrial and ventricular septal defects, often a single atrium or single ventricle, and generally pulmonary stenosis or atresia. In view of the different arrangement of the atriums in these two groups, a different pattern of the other defects in the heart might be expected. They are, however, found to be very similar: atrial and ventricular septal defects, partial or complete transposition, and pulmonary stenosis or atresia are often found in both. Evidently the failure to decide on which side the development is to take place causes difficulties in the complex processes of growth and rotation that divide the heart into its two sides and bring the aortic and pulmonary rings opposite the correct ventricle. A Blalock-Taussig operation should be helpful in most cases of both groups though perhaps the result cannot be expected to be as good as in uncomplicated cases of Fallot's tetralogy. If the patient is sufficiently disabled the operation can be advised whenever the blood flow to the lungs is diminished and suitable pulmonary arteries are present.

Pure Veratrum Alkaloids for Hypertension.—Doyle and Smirk studied the effects of therapy with veratrum given orally in hypertensive patients, using the pure alkaloids neogermitrine and protoveratrine, and various alkaloidal mixtures. They also compared the effects of neogermitrine and protoveratrine given by mouth and by injection, with particular reference to toxic manifestations. They found that minute doses such as 0.1 mg. of neogermitrine or 0.15 mg. of protoveratrine, when given intravenously in hypertensive patients, produced falls of blood pressure to normal or even to hypotensive levels. Similar effects were obtained with subcutaneous or oral administration, provided larger doses (0.4 mg.) were given. The therapeutic margin between toxic and hypotensive doses was not distinctly greater with the pure alkaloids than with mixtures. The alkaloids that lower the blood pressure also lead to the characteristic toxic manifestations. The blood pressure may be reduced more readily without toxic symptoms in labile than in fixed hypertension. Toxic effects have been less frequent when the veratrum alkaloids have been given in small subdivided doses intravenously than when administered by mouth or subcutaneously. Of 65 hypertensive patients in whom veratrum treatment was attempted, 15 obtained a good measure of control over the level of the blood pressure. Although a good control over the blood pressure could be obtained for a time in a larger number of patients, the margin between therapeutic and toxic doses narrowed, and effective treatment could not be maintained in all patients who began well.

Giornale di Clinica Medica, Parma

34:1001-1124 (Sept.) 1953. **Partial Index**

Acute Insufficiency of Right Side of Heart (Acute Cor Pulmonale) in Two Cases of Pulmonary Neoplasm. G. Micheli Pellegrini and S. Bardelli. —p. 1001.
Psychic Syndromes in Basedow's Disease and Thyroidectomy: Therapeutic Efficacy of Sleep. R. Rossini and P. Dazzi.—p. 1018.
*Behavior of Electrocardiogram in General Controlled Hypothermia. G. Capretti, E. Bezzi and R. Luccini.—p. 1029.

Electrocardiograms During Controlled Hypothermia.—Electrocardiographic changes occurring during controlled hypothermia were studied in animals and in human beings. The neurovegetative system was blocked with drugs that have an elective action on the nervous conduction and the peripheral chemical effectors. Hypothermia was produced by means of an original electromechanic apparatus. It was induced gradually in a group of dogs until they died. There was a gradual decrease in the heart rate that at 20 C became 20 per minute. At this temperature there were pronounced changes in the QT interval, the ST segment, and the T-wave. Hypothermia was stopped in another group of dogs at a body temperature of 25 C. At this temperature, the heart rate was half of the initial value, and the electrocardiographic changes were never so pronounced as in the first group of dogs. They involved mainly the PR segment, the electric systole, and the phase of repolarization. These became normal as soon as the temperature was restored to normal. Interventions were performed on the bloodless heart and great vessels of dogs at a body temperature of 25 C. The circulation was interrupted by closing the venae cavae and the azygos for 13 to 16 minutes. On opening the pleura and the pericardium, there were no significant electrocardiographic changes. During the operation there was a pronounced change in the ST segment, which began to return to normal after the intervention was concluded. The most important manifestations of myocardial excitation (extrasystole and block) that are usually observed when this surgery is performed on bodies at normal temperature were inhibited. Moderate hypothermia (34-33 C) was induced in seven patients in whom operations were performed for duodenal ulcer and cancer of the stomach, bladder, and gallbladder. The major electrocardiographic alterations were seen in the phase of repolarization (ST segment and T-wave). These alterations, similar to those observed during ventricular impairment caused by overburden of the heart or ischemia, suggested a state of general impairment of the myocardium. A cause and effect relationship between controlled hypothermia and these alterations could not be established. They occurred

mainly in patients who showed marked resistance to the induction of hypothermia (shivering and cyanosis). These changes are not marked when moderate hypothermia is induced, and they are easily reversible. They do not constitute a sufficient element to contraindicate the use of hypothermia.

Journal of Endocrinology, London

9:351-445 (Oct.) 1953. **Partial Index**

Parallel Biological Assays of Cortisone Equivalent of Dog's Adrenal Vein Blood. S. W. Bibile and M. Vogt.—p. 351.
Assay of Cortical Steroids by Mouse Eosinophil Test. S. W. Bibile. —p. 357.
Studies on Determination of Urinary Corticosteroids. C. de Courcy and C. H. Gray.—p. 391.
Chromatographic Investigation of Δ^4-3-Ketosteroids and α-Ketolic Steroids in Human Urine. C. de Courcy, I. E. Bush, C. H. Gray and J. B. Lunnon.—p. 401.
Influence of Placental Size on Foetal Growth in Man, with Special Reference to Multiple Pregnancy. T. McKeown and R. G. Record. —p. 418.
Urinary Excretion of Oestogrens and Pregnanediol at End of Pregnancy, During Labour and During Early Puerperium. T. E. T. Bradshaw and W. J. E. Jessop.—p. 427.

Lancet, London

2:893-946 (Oct. 31) 1953

Sociomedical Aspects of Diabetes Mellitus. R. E. Tunbridge.—p. 893.
Antibiotics in Chronic Bronchitis. J. R. May.—p. 899.
*Sputum in Chronic Bronchitis: Effects of Antibiotics. P. C. Elmes, K. Knox and C. M. Fletcher.—p. 903.
*Management of Adrenal Cortical Failure in Meningococcal Septicaemia. E. M. Buzzard, G. Higgins, L. P. A. Newborne and J. C. Pease. —p. 907.
Sickle-Cell Trait and Blood-Groups in Greece. C. Choremis, E. W. Ikin, H. Lehmann and others.—p. 909.
Antibody Formation in Allergic and in Normal People. D. D. Adams. —p. 911.
Dehydro-Ascorbic-Acid Level of Blood in Health and in Typhoid Fever. S. Banerjee and B. Belavady.—p. 912.
Lactic Acid in Treatment of Osteo-Arthritis. J. S. Lawrence.—p. 913.
Epiphrenic Oesophageal Diverticulum with Cardiac Pain. D. G. Julian. —p. 915.
Haemochromatosis of Heart. G. Bourne and R. J. R. Cureton.—p. 917.

Sputum in Chronic Bronchitis.—Twelve men and one woman between the ages of 42 and 68 with chronic bronchitis were given short courses of chemotherapy. Penicillin was given orally in doses of 200,000 units every four hours (1,000,000 units in each 24 hours) for seven days, chloramphenicol (Chloromycetin) in doses of 500 mg. four times daily for seven days, chlortetracycline (Aureomycin) in doses of 500 mg. four times daily for seven days, and sulfamethazine in doses of 1 gm. four times daily for seven days. The bacteriological and microscopic changes in the sputum and the clinical effects were observed. Although each drug, except sulfamethazine, temporarily reduced bacterial counts and the purulence of the sputum, the clinical effects were slight. None of the drugs used appeared suitable for the prophylaxis of acute exacerbations of chronic bronchitis, since they did not fulfill all of the following requirements of a drug for this purpose: It is inexpensive, free from toxic effects, effective against the whole range of bacteria responsible for chronic bronchitis, and not likely to impart acquired resistance. Foggy weather appeared to have a significant effect in increasing the purulence of the sputum only in patients with Hemophilus influenzae in their sputum.

Adrenal Cortical Failure in Meningococcic Septicemia.—Two patients, a 15-year-old boy and a 45-year-old man, with meningococcic septicemia and adrenal cortical failure were given specific treatment with Eucortone, a proprietary preparation of cortical extract of the suprarenal gland, and cortisone, in addition to penicillin, sulfamethazine, and sulfadiazine for treatment of the infection, and oxygen therapy for control of anoxia. Both patients survived. During the critical stage of the illness, frequent large doses of Eucortone given intravenously and of cortisone given by mouth are advised; cortisone should be given orally in an initial dose of 100 mg. followed by 25 mg. every six hours until the infection is controlled and the patient is out of danger, the dose being reduced to 12.5 mg. every six hours for the following two days and the total daily dose being thereafter halved every second day. An initial dose of 50 cc. of Eucortone intravenously should be given and followed by another dose of 20 cc. an hour later and further doses of 10 cc. hourly until the systolic blood pressure is maintained at 80 mm. Hg. The younger patient received a total dose of 290 cc. of Eucortone parenterally within five days and 200 mg. of cortisone intramuscularly and an additional 200 mg. of cortisone orally within seven days. The older patient was given a total dose of 810 cc. of Eucortone parenterally and 437.5 mg. of cortisone orally within seven days. These doses are large, but the demands on the adrenal cortex are known to be great in the presence of severe infection. The oxygen tent seems to be superior to other methods of oxygen therapy and proved lifesaving in the younger patient.

Minerva Pediatrica, Turin

5:669-716 (Aug. 31) 1953. **Partial Index**

*Two Cases of Tuberculous Meningitis Cured with Isoniazid Alone. A. Gentili and A. Paci.—p. 669.
Clinical and Therapeutic Observations on Some Cases of Hemophilia. E. Grasso and B. Fantuzzi.—p. 673.
*Therapeutic Action of Isoniazid on Infantile Tuberculosis. A. Rossini, A. Fattori and S. Gaballo.—p. 703.

Tuberculous Meningitis Treated with Isoniazid Alone.—Two children with tuberculous meningitis were treated with isoniazid alone and recovered. The first child, 2½ years old, was given 100 mg. of the drug orally in seven divided doses every day for 220 days and concurrently from 10 to 20 mg. intrathecally every day. This was given in two doses by the lumbar and suboccipital routes for 10 days, then only suboccipitally for 15 days, and thereafter either by the suboccipital or the lumbar route for 60 days. After this, three injections were given every week for more than 100 days until the child was discharged. The second child was a 5-year-old girl in whom the onset of the disease was sudden and temperature elevated. She received 100 mg. of isoniazid orally in six or seven divided doses every day for 150 days, then 150 mg. for 50 days. Concurrently she was given from 10 to 30 mg. of isoniazid in two divided doses by the suboccipital and the lumbar routes for 20 days and then in one dose by the suboccipital route for 40 days. The therapy was thereafter tapered off with injections by the suboccipital and lumbar routes at first three times and later two times a week until the child was discharged. There were no side-effects attributable to the drug. The temperature returned to normal, there was gain of appetite and weight, and the neurological symptoms were attenuated. The morphological and staining qualities of the tubercle bacilli were modified after the first injections of isoniazid, and the bacilli were no longer present in the spinal fluid after the first day of therapy. The fluid reactions were the same as those following streptomycin therapy. They were severer in the second patient in whom there was a sudden onset of numerous polynuclear and meningeal cells. These reactions subsided rapidly in both. The first child was clinically cured after 70 days, the second after 60 days of therapy. At the time of writing both children were well, 14 and 13 months respectively after therapy was instituted. Isoniazid gave as encouraging results as streptomycin. The combination of the two antibiotics may give even better results in treatment of tuberculous meningitis.

Isoniazid in Infantile Tuberculosis.—Isoniazid was given to 81 children, between 2 and 14 years of age, with tuberculosis. There were exudative allergic processes in 66 of them, active tuberculosis in 14, and tuberculous meningitis in 1. The dose of isoniazid administered varied, according to the patient's condition and age, from 4 to 5 mg. per kilogram of body weight daily in two doses after meals. The treatment was continued for from 9 to 165 days and was discontinued after about five months in the patients in whom there was slight or no improvement. Side-effects attributable to the drug were rare. Maculopapules appeared on the neck and thorax of two children and purpura on the face of another child, but they regressed rapidly. Therapy was discontinued definitively in two children in whom jaundice developed. The condition was aggravated in 12 chil-

dren with the exudative allergic processes. According to Monaldi's pathogenetic concept, these forms are due essentially to the organism's reaction to a specific toxic stimulus. Since it seems that isoniazid determines an increase of the tuberculin reactivity, it may have also accelerated the disgregation of the few bacilli that were present in these allergic processes so that when the *in loco* specific toxic products were increased there may have also been an increase of the organism's reaction and therefore of the allergic exudate. There was a marked improvement in 7 of the 14 children with active tuberculosis in whom the disease was of recent origin. The condition remained unchanged in the other seven in whom the disease was of longstanding. The child with tuberculous meningitis is recovering. Caution should be used in administering isoniazid to patients with tuberculous exudative allergic processes since it may accelerate the bacterial lysis and thus extend the process.

Münchener medizinische Wochenschrift, Munich

95:1169-1192 (Oct. 30) 1953. **Partial Index**

Exceptional Position of Women in Accidents. A. Mayer.—p. 1169.
Iodine Prophylaxis with Iodized Salt Used for Cooking and Diffuse Toxic Goiter Due to Iodine. R. May.—p. 1172.
*Differential Diagnosis Between Diphtheria and Infectious Mononucleosis. A. Heller.—p. 1174.

Differential Diagnosis Between Diphtheria and Infectious Mononucleosis.—Of 26 patients who were admitted to the medical department of the Munich City Hospital with a diagnosis of diphtheria or being suspected of having diphtheria, diagnosis of tonsillitis was established in 12 and infectious mononucleosis in 14. This high percentage of an erroneous diagnosis in patients with infectious mononucleosis resulted to a large extent from the various initial symptoms of this disease. In an attempt to facilitate for the practitioner a correct diagnosis, Heller emphasizes the following points. 1. Considerable local petechiae in the area of the palate in a patient whose general condition is not or only slightly impaired and whose circulation is unaffected suggest infectious mononucleosis rather than diphtheria. 2. An initial temperature above 101 F (38.5 C), which may or may not rise further despite the usual treatment, is indicative of infectious mononucleosis. The initial temperature values in infectious mononucleosis are as a rule higher than the typical values in diphtheria, and there is parallelism between temperature and the coating of the pharynx in infectious mononucleosis. 3. Massively enlarged lymph nodes in the submandibular region, the angle of the jaw, along the sternocleidomastoid muscle as well as in the nuchal and inguinal regions, and increased size of the spleen are of considerable aid in nearly establishing the diagnosis of infectious mononucleosis. 4. Diagnosis may be confirmed by the hemogram with leukocytes ranging from 3,000 to 26,000, segmentation nuclei varying from 5 to 27%, lymphocytes from 50 to 95%, and monocytes from 10 to 23%, and by a positive Hanganatziu-Deicher reaction with a titer of 1:112 and more as compared to one of 1:56 in normal persons.

Nordisk Medicin, Stockholm

50:1353-1386 (Oct. 1) 1953. **Partial Index**

Variations in Blood Pressure and Pulse Rate During Exercise in Hypertensive Patients Treated with Hexamethonium. V. Rønnov-Jessen.—p. 1356.
*Benign Disorders of Esophagus Simulating Cancer of Esophagus. E. Madsen.—p. 1360.
Possibilities for Diagnosis of Cancer of Stomach. H. E. Blomquist.—p. 1363.
Liver Damage in Ulcerous Colitis. B. Andreassen and K. Austarheim.—p. 1370.

Benign Disorders of Esophagus Simulating Cancer of Esophagus.—From 1940 to 1950, 688 cases of true cancer of the esophagus were diagnosed in the Radium Station in Copenhagen. Madsen reviews the 108 benign disorders of the esophagus found in patients referred to the Radium Station for observation for esophageal cancer. Most frequent were cardiospasm, cardiovascular disease, brachyesophagus with dystopic cardia, esophagism, esophageal diverticulum, bulbar and pseudobulbar affections, hiatus hernia, and Plummer-Vinson's syndrome. In 68 cases of dysphagia in older persons, cancer was suspected because of the clinical symptoms. Greatest interest was attached to the 38 cases in which roentgen examination before admission led to suspicion of cancer of the esophagus. In most benign cases, the results of repeated roentgen examination with special attention to the suspected part will rule out the diagnosis of esophageal cancer, but the surest information depends on esophagoscopy, which is always indicated when roentgen examination shows an esophagitis-like picture. On account of the vague initial symptoms in cancer of the esophagus, the author favors roentgen examination even in cases in which there is not marked dysphagia.

Philippine Medical Association Journal, Manila

29:451-504 (Sept.) 1953

Dihydrostreptomycin in Leprosy Cases in Armed Forces of Philippines: Preliminary Report. D. M. Garduño.—p. 451.
Pathology of Old Age. B. Barrera.—p. 463.
Surgical Problems in the Aged. L. F. Torres Jr.—p. 467.
Almost Fatal Penicillin Anaphylactic-Like Shock Reaction: Report of Case at V. Luna General Hospital, (AFP). C. B. Icasiano.—p. 472.
Menarchial Postoperative Acute Hypoparathyroidism and Acute Hypothyroidism. P. T. Nery.—p. 477.

Practitioner, London

171:479-590 (Nov.) 1953. **Partial Index**

Fibroids and Their Management. R. J. Kellar.—p. 483.
Disturbances of Micturition in Women and Their Management. J. C. Moir.—p. 492.
Present Status of Hormone Therapy at Menopause. H. C. McLaren—p. 500.
Gynaecological Disorders in Old Age. W. I. C. Morris.—p. 514.
Salpingitis. C. M. Gwillim.—p. 521.
Tuberculosis of Female Genital Tract. P. Malpas.—p. 527.

Presse Médicale, Paris

61:1379-1396 (Oct. 24) 1953

Glucose Tolerance Test with Concurrent Determination of Glycemia and Pyruvemia in Diabetic Patients. R. Moreau, S. Bonfils, P.-M. de Traverse and G. Hadjissotiriou.—p. 1379.
*Epidemic Hepatitis or Hepatitis of Inoculation During Treatment with PAS in Infusions. E. Barré and A. Danrigal.—p. 1380.
*Antiatheromatous Properties of Heparin: Clinical and Biological Proofs. A. Tamchès.—p. 1382.
Functional Study of Ovarian Autograft Series. H. Lelièvre.—p. 1383.

Hepatitis and PAS.—Approximately 500 patients stayed in a 140-bed ward for male patients with tuberculosis throughout a period (January, 1952, to April, 1953) in which 29 cases of benign and 1 case of fatal hepatitis with jaundice occurred. The one fatality was believed to be due to a complication of tuberculosis rather than hepatitis alone. Those affected included 28 male tubercular patients who had received prolonged treatment with infusions of *p*-aminosalicylic acid (PAS), one intern, and one nurse. No hepatitis was found in the ward for female patients with tuberculosis, and none appeared in male patients treated with streptomycin and/or isoniazid or short courses of *p*-aminosalicylic acid in infusions. Hepatitis by inoculation was suspected, but apparently disproved by a program of greater strictness in the sterilization of equipment used in the infusions. This evidence, together with the cases of the nurse and the intern, suggested an epidemic hepatitis transmitted by the nasopharyngeal or the alimentary route. The authors point out that the two types of hepatitis do not appear in such different forms as general opinion holds. The conclusion is not that *p*-aminosalicylic acid is in itself toxic, but that its prolonged administration has a particular effect on the liver cells of male patients, making them peculiarly susceptible to hepatitis. The authors feel that this fact does not warrant the discard of *p*-aminosalicylic acid, especially in view of its great value in the treatment of tuberculosis; but they suggest that a detailed study be done of the effects of the drug on the livers of humans and experimental animals.

Antiatheromatous Properties of Heparin.—The author asserted in 1949 that heparin has angiotrophic and angiospasmolytic properties in addition to its anticoagulant function. In the present work, he adds to these attributes an antiatheromatous

power of heparin, but considers insufficient the explanation offered by Graham and his colleagues for the mechanism of this action, namely, that heparin reduces the size of the elements of blood lipoproteins. This, says Tamchès, would prevent exacerbation of existent arterial lesions, but would not account for the amelioration of the arterial lesions of angina pectoris and cerebral arteritis brought about by treatment with heparin. Some other explanation must be found. Tamchès offers as clinical proof of the antiatheromatous properties of heparin his results with patients with any and all diseases of the circulatory system. His experience showed that synthetic anticoagulants such as ethyl biscoumacetate (Tromexan ethyl acetate) do not possess the antiatheromatous attributes that heparin does. He also points out two faults in the work of M. J. Binder and others (*J. A. M. A.* **151:**967 [March 21] 1953): the choice of angina pectoris in its painful manifestations to illustrate the failure of heparin in the treatment of this disease and the choice of isotonic sodium chloride solution as a placebo medicament. Concerning the first point, it is pointed out that the effects of an anginal paroxysm are subjective and the causes multiple. Tamchès reports success with heparin in his cases of angina pectoris, as demonstrated by the disappearance of the characteristic electrocardiographic changes in the T-wave and the ST segment. In regard to the second point, Tamchès says it is dangerous to consider isotonic sodium chloride solution a neutral material in the circumstances, since it has been reported as being of value in the treatment of arterial diseases, notably thromboangiitis obliterans, coronary arteriosclerosis, and infarcts due to cardioangiosis. Tamchès concludes that heparin is the most valuable agent known today in the therapy of the vascular wall.

61:1397-1416 (Oct. 31) 1953

*What Becomes of Heparin Injected Intravenously? Study of its Pattern of Elimination in Man. R. Fontaine, P. Mandel and Lux.—p. 1397.
On the Study of Resistance of Germs to Antibiotics. R. Mayoux, A. Bertoye, M. Carraz and J.-P. Rebattu.—p. 1398.
Technical Difficulties of Nitrogen Balance in Man: Importance of Previous Regimen. R. Lagier and M. Demole.—p. 1399.
New and Interesting Perspectives on Cytodiagnosis of Cancer. H. Hinglais and M. Hinglais.—p. 1401.
Ascites of Genital Origin in Woman. M. Roux and R. Mercier.—p. 1402.

Elimination of Heparin.—In order to find out what becomes of heparin injected intravenously, the authors studied its pattern of elimination in 13 healthy young subjects. In eight of nine who were each given 100 mg. of heparin, about 40% of it was found in the urine and the rest remained in the blood. One subject eliminated all of the heparin. Urinary elimination stopped entirely after 12 hours. In the four subjects who were each given 150 mg., urinary elimination of heparin was increased, without, however, exceeding 60%; it lasted more than 12 hours. It is certain that the fraction of the original heparin retained in the blood undergoes disintegration, but the mechanism involved in this is not known. The fact that when protamine is injected simultaneously with it, heparin does not appear in the urine seems to indicate that protamine favors the disintegration of heparin. Determination of the amount of heparin in the urine is considered to constitute an adequate control of the administration of the drug.

Proceedings of Royal Society of Medicine, London

46:799-900 (Oct.) 1953. **Partial Index**

Control of Tuberculosis: Preventive Measures in Chest Clinics. R. Greenville-Mathers and H. J. Trenchard.—p. 809.
Psittacosis: Recent Epidemiological Observations. J. C. N. Westwood.—p. 814.
The Patient with an Advanced Carcinoma of Bladder. N. Hudson.—p. 845.
Vaso-Epididymal Reflux Syndrome. A. W. Badenoch.—p. 847.
An Approach to Problem of Simple Enuresis. A. R. C. Higham.—p. 849.
Syndrome of Erythema Nodosum, Arthritis and Bilateral Hilar Gland Enlargement. M. M. Craig and D. G. Ferriman.—p. 867.

Revista Clínica Española, Madrid

50:261-332 (Aug. 31) 1953. **Partial Index**

Toxoplasmosis in Humans. J. M. Ales Reinlein and M. Ríos Mozo.—p. 261.
Changes of Thyroids in Prevention of Endemic Goiter with Iodized Salt. F. F. Rodríguez Moreno.—p. 270.
Conditions of Flocculability of Plasmatic Proteins. J. Carreras Pico, C. Santos Luengo and E. Aguirrezabal.—p. 290.
*Shoulder-Hand Syndrome. M. Losada L. and J. Zañartu O.—p. 298.

Shoulder-Hand Syndrome.—The shoulder-hand (Steinbrocker's) syndrome is a painful functional incapacity of the shoulder and of the hand of the same arm, with edema, circulatory and trophic disorders of the hand, without involvement of the elbow. The syndrome is generally unilateral. It develops in three progressive stages with irreversible lesions in the third stage. The subjects of this report were four women and two men between the ages of 44 and 77 years. The syndrome was complete in all cases. The disease was either in the first or in the second stage in five patients and at the beginning of the third stage in one. The right arm was involved in three cases and the left in two; in one the disease was bilateral. Pain and functional incapacity of the shoulder and of the hand were acute or subacute in all patients, except one in whom the functions of the hand were normal. Unilateral or bilateral fibrosis of the palmar aponeurosis was observed in three patients, including the patient with the bilateral syndrome. Roentgenography was made on the shoulder in five patients, on the hand in one, and on the spine in six. Moderate osteoporosis was observed in the shoulder of three patients and the hand of one. In the spine, arthrosis of the vertebrae on the side of the involved shoulder was observed in three cases and bilaterally in one. The disease was considered secondary to vertebral arthrosis in three cases, and in one case it followed myocardial infarct. All patients had local applications of heat followed by muscle massage and mild progressive mobilization for a period that varied from one to three months. In two patients with the disease in the first stage, the treatment produced a cure that remains unchanged six months after discontinuation of the treatment. Procaine (Novocaine) hydrochloride block of the stellate ganglion was done on three patients in the various stages of the disease. The treatment failed. In these three patients and in the other patient in the group, cortisone and kinesitherapy gave rapid excellent results that persist a year and a half after discontinuation of the treatment. Cortisone was given intramuscularly at different doses, up to a total dose of 5 or 5.5 gm. in a period of time that varied between two and a half and five months. The authors direct attention to the following facts: 1. Cortisone treatment makes surgery unnecessary in patients with the advanced stage of the shoulder-hand syndrome. 2. The drug produces marked improvement in the general condition of the patient and a feeling of well being. 3. The unpleasant effects of the drug are moderate and transient.

Revue du Rhumatisme, Paris

20:587-673 (Aug.-Sept.) 1953

Osteoarthropathy Due to Work in Caissons with Compressed Air. P. Ravault, P. Merer, L. Roche and G. Rayneau.—p. 587.
Cortisone, ACTH, and Tuberculosis: Clinical and Experimental Considerations. J. Baudot, J. Arlet and A. Delaude.—p. 600.
*Remarks on Osteoporosis of Castrated Women and Women After Menopause Based on Study of Vaginal Cytology in Such Patients. S. de Sèze, A. Mazabraud and M. Mazabraud.—p. 608.
Serologic Research in Chronic Inflammatory Rheumatism. F. Jacqueline, A. Eyquem and E. Jochem.—p. 617.

Osteoporosis and Vaginal Cytology.—This work is based on the concept of the close relation between the endocrine system and protein metabolism. Three different hormonal types in naturally postmenopausal or castrated women with osteoporosis were isolated by the authors, on the basis of stained vaginal smears from 13 such patients, 4 of whom were castrated, who had not received any previous hormone therapy. In the four castrated women and in one whose menopause had occurred abnormally early, there was evidence of both androgen and estrogen, the latter presumably of adrenal origin. In three patients, one of whom was castrated, an atrophic type indicating

ovarian and adrenal senility was found. A mixed atrophic-estrogenic type appeared in six patients, all of whom had had natural menopause and one of whom had also showed the second type. This third type represents ovarian senility associated with adrenal cortical dysfunction. The authors conclude that lack of ovarian estrogens is not the sole hormonal factor causing osteoporosis in postmenopausal patients, since osteoporosis does not occur in all such patients. This study of vaginal cytology revealed that new hormonal states were brought about by suppression of ovarian activity in groups 1 and 2. This new state appears to depend on the adrenals as accessory gonads, and, without forgetting that castration and natural menopause are the prime movers in this osteoporosis, it seems possible to say that the hypophysioadrenal reaction is at least as important as the first cause itself.

Semaine des Hôpitaux de Paris

29:3369-3408 (Oct. 30) 1953

Hepatic Capsulitis as Evidence of Masked Cholecystitis: Cholesterolic Polyps of Gallbladder Diagnosed by Laparoscopy and Royer's Method of Angiocholography. J. Caroli, J. André, P. Ricordeau and A. Fourès. —p. 3369.

*Cryotherapy in Acne by Giraudeau's Technique and Associated Methods. P. de Graciansky, S. Boulle and M. Boulle.—p. 3373.

Analytic Study of Quick's Time Test in Hepatic Insufficiency by Differential Determinations of Prothrombin, Proconvertin, and Proacceleerin. D. Alagille, L. Hartmann and R. Fauvert.—p. 3375.

Major Nosographic Laws of Positive Psychiatry. M. Leconte.—p. 3387.

Cryotherapy in Acne.—Cryotherapy for the treatment of acne as first described by Giraudeau in 1929 consists of massaging the affected portion of the body with a mixture of carbon dioxide snow, acetone, and sulfur. The authors feel that this method should not be discarded, since it has proved its worth in the treatment of acne that is not amenable to iodized, sulfurized, or salicylized and resorcinized lotions and can be used without interrupting the patient's activity. It is particularly successful in curing papulopustular acne of young persons with fatty skin. It can be used in conjunction with ultraviolet irradiation and trichloroacetic acid to obtain a rather forceful simple desquamation or a true exfoliation that generally permits the patient to continue his normal routine.

Wiener medizinische Wochenschrift, Vienna

103:817-834 (Oct. 31) 1953

Genesis of Peripheral Disturbances of Blood Perfusion and Their Treatment. M. Ratschow.—p. 821.

Therapy and Prophylaxis of Reflex Disturbances of Circulation and Respiration in Course of Anesthesia. A. Benke.—p. 825.

*Contribution to Symptomatology and Therapy of Paget's Disease. R. Neugebauer.—p. 827.

Paget's Disease.—The occurrence of osteitis deformans is reported in a 64-year-old woman and in her 61-year-old brother. The bones of the skull, spine, and lower extremities were involved in the woman, and there was pronounced and generalized involvement of the bones in the man. The woman had myopia of 12 diopters, and the man had myopia of 15 diopters. The man's two children also had pronounced myopia of 12 and 15 diopters respectively. The serum alkaline phosphatase was strikingly elevated in the two patients with Paget's disease, but was normal in the two myopic children. The children did not have any changes in their bones. Both patients stated that their mother had had bowed legs, kyphosis, enlargement of the circumference of the head, and myopia. It is suggested that the pronounced myopia in the patients and in three additional members of their family may be related to Paget's disease in that it can be considered as a manifestation of general inferiority of the mesenchymal tissue. The high serum phosphatase content of 160 units (King-Armstrong) in the man induced the author to give corticotropin a therapeutic trial in this patient; 25 mg. of corticotropin combined with 1 gm. of a proprietary preparation of vitamin C (Myascorbin) divided in two intramuscular injections was given daily for 10 days. The alkaline serum phosphatase dropped from 160 units to 48 units (King-Armstrong). Pain in the legs and in the sacral region, which had been severe before the treatment, subsided completely, and the patient, a heavy manual laborer, was able to resume his work. It is suggested that the drop in serum phosphatase resulted from the inhibitory effect of the corticotropin on the osteoblasts, which are of mesenchymal origin and produce the phosphatase.

Ztschr. f. d. ges. innere Medizin, Leipzig

8:765-812 (Sept. 1) 1953. **Partial Index**

Nature and Treatment of Chronic Articular Rheumatism. T. Brugsch. —p. 765.

Withdrawal of Gastric Specimens for Cytodiagnosis with Aid of Flexible Forceps with Lateral Shearing-Out Device. H. Müller.—p. 779.

Demonstration of Hemoglobin and of Color of Stroma in Erythrocytes in Staining of Blood Smears According to Pappenheim. J. Brugsch, F. Kubowitz and E. Tichter.—p. 781.

*Diagnosis and Therapy of Endocarditis Lenta. H. C. Moeller, H. O. Dorscheid and H. J. Otte.—p. 782.

Antistreptolysin Reaction in Differential Diagnosis of Rheumatic Diseases. H. Seifert and H. Tichy.—p. 794.

White Blood Cell Picture in Peripheral Blood in Patients with Bronchial Carcinoma: Significance in Differential Diagnosis. F. H. Schulz and E. Kerrinnes.—p. 798.

Diagnosis and Therapy of Endocarditis Lenta.—Moeller and associates present observations on 18 patients with endocarditis lenta, in each of whom streptococci of the viridans group were cultured from the venous blood, including Streptococcus salvarius and enterococci. It was surprising that in several cases the primary culture revealed streptococci in the hanging drop, but when this material was inoculated into other mediums, no further growth resulted. Later cultures, however, confirmed the earlier microscopic findings. Streptococci of the viridans type were found also in the blood cultures of seven patients who did not have endocarditis lenta but who had malignant tumors or various infectious diseases, such as extrapulmonary tuberculosis, polyarthritis, or Douglas' abscess, and who also had focal infections. In order to establish the most effective antibiotic therapy, the causal organisms were tested in vitro for their sensitivity against penicillin, streptomycin, and chlortetracycline (Aureomycin). Depending on the outcome of the test, the patient was treated with penicillin, with penicillin alternating with chlortetracycline, or with the combined administration of penicillin and streptomycin. Six of the 18 patients with endocarditis lenta died; 4 may be considered as cured; and the remaining 8 patients have not been followed for a sufficient length of time to justify a final evaluation. Whereas penicillin either alone or in combination with streptomycin produced excellent results in some of the cases, the therapeutic effect of chlortetracycline was not unequivocally favorable.

Ztschr. f. Hygiene & Infektionskrankh., Heidelberg

137:541-642 (No. 6) 1953. **Partial Index**

*Epidemic of Typhoid Due to Contact with Infected Fish. H. Hompesch. —p. 541.

Culture of Leptospirae. H.-G. Gram.—p. 553.

Tolerance for and Efficacy of Drugs Used for Air Disinfection: Suitability of Triethylene Glycol for Air Disinfection. W. Maassen.—p. 566.

Investigations on Combat of Industrial Anthrax: Sanitary Measure in Leather Tanneries. E. Hailer and K. Heicken.—p. 611.

Epidemic of Typhoid Due to Contact with Infected Fish.—Hompesch describes an epidemic of typhoid that, after infection by water, milk, and meats had been ruled out, was traced to contact with fresh (unsalted) fish. At the time the cause of the epidemic was investigated, the fish could no longer be examined. It may have been contaminated by ice, which had been produced from possibly contaminated water. The 44 cases were in 30 women and 14 men. When the eight patients who contracted the typhoid secondarily from other members of the family (two females and six males) are disregarded, the predominance of women is even greater (28 women and 8 men). Some of the women were saleswomen who had sold the contaminated fish, and others were housewives who had prepared it. The author stresses that, in investigating epidemics, foods eaten only after cooking should not be overlooked. Especially if women greatly predominate in an epidemic, exposure to uncooked food should be considered as a source of infection.

BOOK REVIEWS

Hyperparathyroidism. By B. Marden Black, M.D., Associate Professor of Surgery, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Minneapolis. Publication number 173, American Lecture Series, monograph in American Lectures in Endocrinology. Edited by Willard O. Thompson, M.D., Clinical Professor of Medicine, University of Illinois College of Medicine, Chicago. Cloth. $3.75. Pp. 119, with 19 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

One of the most notable contributions to medical journalism in recent years has been the introduction of the American Lecture Series. The present monograph is a worthy addition to this group. The author, after a brief historical survey and discussion of the pathological physiology and pathology of hyperparathyroidism, discusses the clinical features, diagnosis, and surgical treatment of the disease. The illustrations and bibliographic references are well chosen. The book is clearly written and is adequately indexed. It has been well printed and has a flexible binding. It can be commended to the internist and urologist, on whom usually depends the recognition of this disorder, as well as to the surgeon who must treat it. Early recognition of this disease is essential if its devastating and irreversible effects on the kidney are to be avoided. Exact diagnosis is possible by available roentgenographic and biochemical methods, and surgical treatment if applied early will cure most patients except those with carcinoma of the parathyroids.

Atlas of Electroencephalography. Volume II: Epilepsy. By Frederic A. Gibbs and Erna L. Gibbs. Second edition. Cloth. $25. Pp. 422, with illustrations. Addison-Wesley Publishing Company, Inc., Cambridge 42, Mass., 1952.

The rapid advance made in the study of "brain waves" is demonstrated by this new edition. The first edition, published in 1941, was a one-volume collection of tracings. The present edition consists of three volumes, of which the book under review is the second. It deals specifically with epilepsy but, in addition to the reproduction of examples of brain-wave tracings, it summarizes statistical information drawn from the clinical records of nearly 12,000 patients with epilepsy and clarifies many controversial issues. Actual-size reproductions of patients' records have been faithfully traced. They constitute a permanent museum of the usual as well as the extraordinary. Because of the authors' long experience in treating patients of all ages, their work represents a blending of laboratory and clinical knowledge, a great asset in the consideration of so diffuse and controversial a subject as epilepsy. Of necessity both unusually large and heavy, the volume does not fit the usual library shelf, but, like the folio works of early anatomists, it should maintain its position of leadership in the important area of electroencephalography. Physicians concerned with epilepsy and with the working of the human brain should own a copy.

Regional Block: A Handbook for Use in the Clinical Practice of Medicine and Surgery. By Daniel C. Moore, M.D., Director, Department of Anesthesiology, Mason Clinic, Seattle. Cloth. $11. Pp. 373, with 262 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

Because the blocking of nerves is a difficult and specialized procedure, it is best learned under the personal supervision and teaching of one skilled in the field. In this book Dr. Moore gives the reader such clear descriptions as to make them almost equivalent to personal teaching. There is a discussion of fundamental principles, the indications for regional blocks, the drugs available, and the reactions that may occur. The work is so organized that one may study any procedure without reading the entire book. Most of the nerve blocks in common use are discussed and described, with excellent diagrams, photographs, and directions. When alternative procedures are available, the author describes only the one that he prefers. An equally clear description of spinal and caudal anesthesia is included in a separate section. Not a general reference book, this work includes the practical considerations of what to do and how to do it. This work should be valuable to anesthesiologists, surgeons, obstetricians, and physicians in general practice who use regional anesthesia for minor procedures in the office.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

World Directory of Medical Schools. [In English and French.] Cloth. $4; 25s; 1,200 French francs; 15 Swiss francs. Pp. 220. World Health Organization, Palais des Nations, Geneva, 1953.

The World Health Organization has made readily available information on medical schools throughout the world. The data, given alphabetically and in tabular form, includes the name, year of organization, administration, academic year, admission requirements, size of teaching staff, total enrollment, number of annual admissions, number of new students admitted annually, language used, length of course, degrees granted, annual number of graduates, and amount of tuition fees. Although the volume gives much valuable information, rather glaring errors appear in the section listing the schools in the United States. Total enrollments are not listed in the total enrollment column but in the annual new admission column. Since the directory acknowledges that this material was taken from THE JOURNAL, it could easily have avoided such an error by correct use of the list of Approved Medical Schools in the United States, published annually, in which data on enrollment in each class as well as total enrollment are given. If material from other nations has been handled in the same manner, data concerning annual admissions and total enrollments would be quite inaccurate, and it is hoped that subsequent editions will eliminate such errors.

Understanding Boys. By Clarence G. Moser. Cloth. $2.50. Pp. 190, with illustrations. Association Press, National Council of the Y. M. C. A., 291 Broadway, New York 7, 1953.

A nonmedical writer has written about the problems of growing up. This is directed to adults who are the parents or friends of boys, in order that they may have a better insight into the physical, social, and emotional growth patterns characteristic of boys between birth and maturity. Girls are mentioned only as they fit into these patterns of adolescence. It is reasonable that the author should concentrate on boys because of his experience in the group work activities of the Y. M. C. A. The material is reasonably accurate though elementary; it is presented in a pleasing manner but is repetitious. After following the boys' physical, mental, social, and emotional growth independently, the author proceeds to develop these in parallel for various age periods. Because of the repetition, this book is useful chiefly as a reference work for picking up ideas about the problems of boys of a particular age. This is the kind of volume that could be suggested by the family physician to help his patients better to understand their boys.

The Alkaloids: Chemistry and Physiology. Volume III. Edited by R. H. F. Manske and H. L. Holmes. Cloth. $11. Pp. 422, with illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1953.

The subject matter in this volume covers the chemistry of the following groups of alkaloids: cinchona, quinazoline, lupin, imidazole, solanum, veratrum, β-phenethylamine, ephedra, and ipecac. Although the subtitle is "Chemistry and Physiology," a minimum of information on the physiology of these alkaloids is included. As in the first two volumes, the authors are well known in their fields, the editing appears to have been thorough, the index is extensive, and the book is well printed.

Childbirth without Fear: The Principles and Practice of Natural Childbirth. By Grantly Dick Read, M.A., M.D. Second edition. Cloth. $3. Pp. 298, with 30 illustrations. Harper & Brothers, 49 E. 33rd St., New York 16, 1953.

The first edition of this book was published in 1942 when Read was a relatively unknown English obstetrician. This present revised and enlarged edition is introduced after the widespread discussion of the author's philosophy and extensive experiences with it in many parts of the world. Five chapters have been added, including a sketchy description of the anatomy and physiology of reproduction, some prenatal dietary instructions, and the physical and emotional benefits of breast feeding and rooming-in. The chapter on prenatal and postnatal exercises is well illustrated. The basic philosophy presented is that ignorance of the childbearing function engenders fear; fear causes tension; and tension interferes with the normal process of labor and causes pain. The author attacks this problem by banishing fear through lay education and the participation of the mother in this most important physiological function. This concept did not originate with Read nor does he take credit for it. He has, however, devoted most of his professional life to popularizing this philosophy with patients and the profession. His success in bringing his ideas to the attention of persons in many parts of the world is the result of his drive and energy. Training for childbirth has resulted in a tremendous change in our pattern of maternity care. Lay education, exercises, and the indoctrination of mothers have decreased the average length of labor, the use of sedatives, and the number of major operative interventions. Natural delivery, however, is not the goal for every woman nor need it be considered as the ideal for American obstetrics. It has been demonstrated that delivery under regional anesthesia following episiotomy is a better procedure for mothers and babies under ideal circumstances. There are major parts of the world, however, where natural delivery has always been the rule and will continue to be the method of choice.

This book was written for the lay person as a prenatal primer. Its purpose is to indoctrinate the mother for childbirth without fear. To this end much of the harangue about the abuse of pain relief, the frequency of operative deliveries, the lack of a moral conscience by many physicians serves no good purpose. If this discussion does anything, it dispels the emotional calm that the text is supposed to instill and leaves in its place a state of turmoil. The last chapter in particular is the hue and cry of a martyr in the cause of safer motherhood. The author deplores the lack of acceptance of all of his ideas by a critical profession. He can rest secure in the belief that his work has borne fruit in the more wholesome, the more normal approach to pregnancy and labor. It can truly be said that he has not labored in vain. His book should be read by all physicians who practice obstetrics. Although there is much in it with which many of them will disagree, it contains a great deal of sound philosophy that will lead to safer and saner obstetrics. For the lay public, however, there are several texts available that expound the philosophy of childbearing without fear in a more wholesome manner.

Die Kreuzschmerzen der Frau: Ihre Deutung und Behandlung; gynäkologische Orthopädie. Von Prof. Dr. Heinrich Martius, Direktor der Universitäts-Frauenklinik, Göttingen. Fourth edition. Cloth. 19.50 marks. Pp. 166, with 73 illustrations by Käthe Droysen. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart-O; agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

Pain in the lumbar and sacral regions in women may have either an orthopedic or a gynecologic explanation. The varying emphasis given in the past to one or the other of these alternatives is reviewed in the prefaces and opening pages of this book, and the author makes an effort to give a balanced presentation of both factors. There is a good summary of recommended methods of examination. The book closes with a meager presentation of original data. Since the author has access to a rich source of clinical material, it is hoped that in subsequent editions he will employ statistical helps beyond the simple computation of averages and percentages. The book has an excellent bibliography and is well indexed, beautifully illustrated, and attractively bound.

Human Behavior in the Concentration Camp. By Dr. Elie A. Cohen. Translated from the Dutch by M. H. Braaksman. Cloth. $5. Pp. 295. W. W. Norton & Company, Inc., 101 Fifth Avenue, New York 3, 1953.

This book was written by a Dutch physician who was himself a prisoner of the Nazis in a camp where wholesale exterminations were carried out. Although his family was sent to the gas chambers and he was subjected to unbelievably bad conditions, he has written with astonishing objectivity. The first half of the book describes the general and medical aspects of the German concentration camps, and although it forms a necessary background for the last half it contains little that has not been published previously. One point that stands out above all others is the farcical character of sanitation and medical treatment in a camp where the prime object was to destroy life, not to save it. The author also has something to say about the inhuman experiments performed on prisoners by German physicians. Although the number of these physicians was relatively small, they reported their experiments in detail to "scientific" meetings attended by a large representation of the German medical profession, and no one raised any objection to the procedures used on either scientific or humanitarian grounds.

The second half of the book is a study of the psychology of the prisoners and of their jailers. This part is of great interest and should be of value to psychologists and psychiatrists, despite the author's tendency to be repetitious. In the foreword Dr. Binger states, "Dr. Cohen tells us, from his personal experience, that the determining factor in the prisoner's initial reaction to life in a concentration camp was his conception of what would happen to him. The closer this conception came to reality the less violent was his reaction. The author leaves us in no doubt as to what would happen to us."

The author ably sums up his findings in a final chapter that should be widely read. He offers convincing proof of the physical and mental adaptability of human beings. In one place he states: "In my view it is not the German as such, but the German individual *malformed* through his German education, that is the determining factor in the behavior of the German people." He throws interesting light on the reasons for the almost nonexistence of neuroses among the prisoners and says: "One would wish that the attention of people could often and for long periods be occupied by events which are of great moment to all. Perhaps they would take less interest then in being ill, with the possible result that the percentage of sick people would be smaller than it now is. It is deplorable that, to all appearances, this desirable state of affairs should be restricted to tensions inherent in war and the danger of war." One cannot help thinking that if there is such a thing as a master race it is made up of the persons who could survive the ordeal of the concentration camps. There is an extensive bibliography but, unfortunately, no index.

Basic Problems in Psychiatry. Editor, Joseph Wortis, M.D. Contributors, Joseph Wortis, M.D., and others. Cloth. $4.50. Pp. 186, with 3 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

This readable little book is an outgrowth of a lecture series for the house staff and community physicians, given at the Jewish Hospital of Brooklyn. The six contributors and the editor, all qualified psychiatrists and psychologists, bring from their varied clinical and research experiences a critique of present day psychiatry. W. Horsley Gantt summarizes the results of Pavlovian conditioned reflex experiments. Paul Hoch compares the various "schools" of psychiatry. Other authors discuss the influence of culture, the validity of psychological tests, the choice of psychosomatic symptoms, and the limitations of psychiatry. The result is somewhat uneven and definitely individualistic. Two contributors append a bibliography. The book might be considered a minority report aimed at the complacency of those who believe that psychiatry already knows most of the answers. The plea of the editor is for a common sense approach based on data verifiable in the laboratory. Psychiatrists will find the book interesting and provocative.

QUERIES AND MINOR NOTES

PROTECTION AGAINST TUBERCULOUS INFECTION

To the Editor:—*What would be adequate protection against infection for a person taking laryngeal swabs from tuberculous patients?*

M.D., Canada.

Answer.—Taking laryngeal swabs from tuberculous patients is perhaps the most dangerous of all antituberculosis measures. There is bound to be explosive coughing occasionally, and the large droplets of mucus will be thrown out into the face. It is much more hazardous than coughing during a physical examination, as the coughs for the latter are usually light and not explosive. The precautions, therefore, are the same as for bronchoscopy, i. e., the wearing of a heavy gauzé mask, gowns, and preferably a transparent shield to protect the eyes. After each session a washing of the face and eyes is recommended.

LUMBAR PUNCTURE HEADACHE AND SPINAL ANESTHESIA

To the Editor:—*Why is there such a high incidence of headaches following the use of heavy dibucaine (Nupercaine) hydrochloride in saddle block anesthesia and almost none with the use of procaine crystals combined with dextrose and epinephrine for prolonged spinal anesthesia?*

M.D., Texas.

Answer.—It is generally accepted that post-lumbar-puncture headache is the result of a change in hydrostatic pressure in the areas occupied by cerebrospinal fluid in the brain. In a small percentage of patients, such headaches develop after transurethral resection performed while they were under the influence of spinal anesthesia. As a rule, however, these patients are not young and seldom are nervous or overly worried. They receive quantities of fluids, and the production of cerebrospinal fluid seems to be adequate. Ordinarily, headache seldom develops.

On the other hand heavy dibucaine (Nupercaine) hydrochloride for saddle block anesthesia generally is used for the obstetric patient. Such a patient usually is nervous and worried until her child is born and she can see that it is in a satisfactory condition. Often, if labor has been prolonged, she is dehydrated and tired, so that she may sleep for many hours without taking fluid. Lactation begins, and the breasts are painful. If the child is breastfed, it removes a certain amount of fluid from the mother. When post-lumbar-puncture headache develops in such a patient, it is likely that it will not last long. Treatment consists in the insertion of a needle in the caudal canal and the injection of 50 cc. of a 6% solution of dextran in isotonic sodium chloride solution. The patient then is asked to sit up for three hours and to drink water freely. Most of these patients will be relieved of their headache at that time and from then on.

Because the bony canal of the spinal column will not yield and the space between the bone and dura is filled with fluid that likewise will not yield, it appears to overcome the disturbance of cerebrospinal fluid incident to the production of spinal anesthesia and brings about a balance of intracranial hydrostatic pressure. Spinal puncture headache also has been treated by a second lumbar puncture and injection of a solution of sodium chloride with the patient in the sitting position until the headache disappears. It is difficult to say whether the local anesthetic agent used is in itself an important factor.

Repair of inguinal hernia with the patient under the influence of spinal anesthesia is followed by a headache less frequently than when saddle block anesthesia is employed for obstetrics but oftener than when transurethral resection is performed with this form of anesthesia. There are perhaps more factors involved in post-lumbar-puncture headache than are mentioned here, but the essential factor is disturbance of intracranial hydrostatic pressure.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

INJECTIONS BY LAYMEN

To the Editor:—*Are there any legal or ethical restrictions on a layman's giving intramuscular injections of medication prescribed by a physician? The person who wishes to give the injections is not a laboratory technician nor an aide nor a nurse, but is trained in bacteriology and chemistry and has given hypodermic needle injections to animals. A licensed physician can be available for some demonstration of proper technique but would not be present at every injection. Is this person qualified to give penicillin or insulin shots or any other similar shots as needed by a patient under care of a physician?*

Ph.D., Illinois.

Answer.—Assuming that the physician has personally made the diagnosis and prescribed the injection, he may delegate to a trained lay person the merely mechanical operation of performing the injection. The physician should be well satisfied that the lay person is properly and adequately trained in the necessary technique, however, because he will be responsible for any injuries that arise as a result of such lay person's negligence. A physician may not delegate to a lay person the performance of any act requiring the exercise of professional discretion or judgment.

ELECTRODE JELLY USED IN ELECTROCARDIOGRAPHY

To the Editor:—*Please give the formula of the electrode jelly used in electrocardiography for the appliance of electrodes.*

Ruben Gandelmann, M.D., Brazil, South America.

Answer.—The formula for one form of electrode jelly that has been extensively used is given by Jenks and Graybiel in the *American Heart Journal* (**10**:693, 1935), from which the following formula is quoted.

In its initial form the mixture contained: sodium chloride, 6½ lb. [2,948 gm.]; pumice [powder], 8 lb. [3,629 gm.]; gum tragacanth, 8 oz. [227 gm.]; potassium bitartrate, 4 oz. [113 gm.]; glycerin, 24 oz. [680 gm.]; carbolic acid, 1 oz. [23 gm.] and water, 2 gal. [8 liters].

The gum tragacanth and glycerin are heated in half the volume of water for six hours. The potassium bitartrate and sodium chloride are dissolved in the remaining volume of water and added. The resulting mixture is stirred thoroughly with an electric mixer and heated again for an hour. The carbolic acid and pumice are then added, together with more water if necessary, and the whole again mixed until of a creamy consistency.

In actual use a small quantity of the paste is rubbed briskly onto the desired skin area, leaving a small surplus to facilitate contact with the electrode. The electrode, a German silver plate about 5 by 8 cm., is firmly applied over this area and held by means of an elastic ribbon or band. The patient usually notices a slight burning sensation, but none has complained of any pain or discomfort. While no instance of skin irritation from this paste has occurred in a large number of patients, the usual caution should be observed with anyone having extremely sensitive skin.

Within reasonable limits, the size of the electrode is immaterial so far as skin resistance and polarization of the electrode are concerned. Resistance measured on the electro-

cardiograph, using the above electrodes and paste, is, in most cases, about 1,000 ohms and rarely as high as 2,000 ohms. This applies equally to myxedematous, cachectic, or Negro patients, from whom it is sometimes difficult or impossible to obtain satisfactory tracings. Electrocardiographic tests made on patients in the wards of the Massachusetts General Hospital (about 400 cases) showed very uniform results, with resistances of from 1,000 to 2,000 ohms and no overshooting.

CANCER IN RETAINED CERVICES

To the Editor:—*With reference to the controversy about total as opposed to subtotal hysterectomy, in what percentage of retained cervices does carcinoma develop? In what percentage does carcinoma develop when electrical conization is done?* *R. B. Robins, M.D., Camden, Ark.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—No acceptable way is known of determining in what percentage of cervical stumps cancer develops, because carcinoma in situ or early invasive cancer may be present at the time of the original operation. Most gynecologists consider cancer that becomes detectable before two years have elapsed as having been present at the time of the hysterectomy. Statistics of numerous tumor centers give an incidence of 2.5% of cervical cancer in stumps. It is logical to believe that the stump is as vulnerable as the cervix attached to the uterus and that the incidence would be the same as for the total population. This varies with race and geographical location. As to the incidence of cancer following cauterization and conization, one would assume that the reports of Pemberton and Smith or Cashman, dealing with cancer of the cervix following cautery, conization, repair or amputation, would be applicable.

Answer.—A composite of several large series of cervical stumps indicates about a 4% incidence of carcinoma. This is a significant percentage. Other factors that bear on this problem concern 18,562 patients who received adequate treatment for irradiative lesions of the cervix; in only 15 of these was cancer known to have developed later. Of another group of 2,255 patients in whom invasive carcinoma was present, only 33 had received adequate treatment of preexisting cervical lesions.

EXTRACTION OF TEETH

To the Editor:—*At our institution we have had considerable discussion on the advisability of giving antibiotics after the extraction of teeth. Your opinion will be very much appreciated.* *M.D., Alabama.*

Answer.—Penicillin should be given to patients after tooth extraction when rheumatic heart disease or congenital heart disease is present. Also, in the presence of a definite infection, penicillin or other antibiotics should be administered. The incidence of bacteremia following tooth extraction is decreased by antibiotic therapy. Although it has been shown that Streptococcus viridans may still circulate in the blood after such chemoprophylaxis, implantation of the organisms on damaged heart valves is, for the most part, prevented, and subacute bacterial endocarditis does not develop, except in those instances in which penicillin-resistant bacteria produce the bacteremia. While the presence of congenital or rheumatic heart disease are absolute indications for chemoprophylaxis, it is probably best also to give patients with arteriosclerotic heart disease the same type of treatment since occasionally this type of cardiac damage may be involved in the development of subacute bacterial endocarditis if bacteremia occurs.

It is impossible, on the basis of the presently available information, to make an authoritative statement in regard to penicillin prophylaxis in dental extraction in all patients. There is little doubt that such management will reduce the number of local complications caused by bacterial invasion, osteomyelitis of the jaw, and cellulitis of the floor of the mouth (Ludwig's angina), for example. The application of such universal chemoprophylaxis must be evaluated, however, in the light of the rarity of secondary bacterial infections following careful dental extraction and the increasing frequency of serious reactions to penicillin and other antibiotics. Because of the increasing number of reports of severe and even fatal reactions to various antibacterial drugs, their use is best restricted to specific situations where prophylaxis is obviously indicated, such as heart disease or infection of the dental structures.

ASTHMA

To the Editor:—*A 72-year-old man living in Denver has asthma. A lower altitude relieves the severity of his symptoms. Would it be worth while to give corticotropin (ACTH) hypodermically? He has taken cortisone by mouth, but the side-effects made him uncomfortable.* *M.D., Kansas.*

Answer.—Most cases of asthma do not require corticotropin (ACTH) or cortisone for symptomatic relief. It is assumed, therefore, that the customary medication, such as ephedrine, racephedrine, aminophylline, iodides, and isopropyl epinephrine sprays, and a search for a causative factor have been unsuccessful. The nature of the side-effects from cortisone is not mentioned. Some of these are due to mineral, protein, and similar metabolic changes that are adjustable by dietary regulations. In some instances, hydrocortisone (Compound F) may be tolerated better than cortisone. The dose is approximately the same. Corticotropin produces very much the same side-effects as cortisone, although it may in some instances be effective in small enough doses to make such reactions minimal. It should be ascertained that the patient does not have the usual contraindications (hypertension, coronary disease, diabetes, and so forth) to the use of corticotropin. A reasonable initial dose is 40 units of the slow absorbing preparation injected intramuscularly twice daily. If there are no results after 48 hours, the dose should be increased. If relief is attained, the dose may be gradually lowered at about two to three day intervals until the maintenance dose is established. In many cases it may be possible to administer the maintenance dose once a day.

STERILIZATION OF RUBBER GLOVES

To the Editor:—*Please state the proper method for cold sterilization or suitable cleansing of rubber gloves used for vaginal and rectal examination. Lysol seems to cause some deterioration even though there is adequate rinsing.*

Elmer F. Gooel, M.D., Beverly Hills, Calif.

Answer.—Rubber gloves employed for vaginal or rectal examination should be thoroughly washed with soap and water after use. Chemical disinfection may be accomplished by soaking them overnight in 70% alcohol; 2% Amphyl (a combination of alkyl and halogen phenol derivatives); or a 38% formaldehyde solution containing 135 cc. of Formalin (38%), 10 gm. of sodium hydroxide, and distilled water to make 1 liter. Following this, the gloves must be thoroughly rinsed to remove all traces of disinfectant. Because chemical disinfection does not provide the degree of safety afforded by steam under pressure, rubber gloves to be used in surgical procedures must be autoclaved. Rubber gloves known to have been exposed to contamination with spore-bearing organisms should be destroyed.

ABDOMINAL REFLEXES

To the Editor:—*Is there any significant difference in the abdominal reflexes of the male and female?*

M.D., Alabama.

Answer.—There is no significant difference in the abdominal reflexes of the male and female, except that the abdominal wall that has been stretched by pregnancy often is devoid of reflexes. The same is true of the very obese abdomen, whether in a man or woman.

MÉNIÈRE'S DISEASE

To the Editor:—*A married woman, 30 years of age, has had Ménière's disease for four years. Her attacks of dizziness are frequent and short. Hearing tests show a 20% diminution in the left ear. Caloric tests show an exaggerated left labyrinth response. Are nicotinic acid, thiamine chloride, and neostigmine bromide still thought to be of value? Of what value is the operation of cutting the chorda tympani nerve? By what measures could the exact cause be determined?*

Leon Paris, M.D., Bronx, N. Y.

Answer.—Early Ménière's disease (labyrinthine hydrops) frequently responds to vasodilators such as nicotinic acid or histamine. The assumption is that the disturbed endolymphatic fluid pressure is the result of disturbed vasomotor control of the circulation to the inner ear, probably owing to arterial spasm. The operation mentioned is not consistent with what is known of the pathology of this condition and is not generally accepted as an effective treatment for the condition. With regard to the etiology, about 10% of cases appear to be of allergic origin. If the patient has any other allergic symptoms, investigation of a possible allergic factor should be undertaken. Allergy to tobacco in the form of cigarette smoke is fairly common. However, in the great majority of cases no specific etiological factor can be found, and the cause remains unknown.

EFFECT OF PHOTOGRAPHIC FLASHLIGHT ON THE EYES

To the Editor:—*I am inquiring about photographic flashlight, especially electronic flash, about 1/1,000 second of 16 lumen seconds of light per square foot at 9 ft. Pictures of babies, even newborn infants, are often taken in dim rooms, with the pupils fully dilated and the baby staring at the camera. Can this harm the eyes?*

M.D., Arkansas.

Answer.—The amount of light reaching the subject has apparently been measured as 16 lumen seconds per square foot and delivered in the course of about 1/1,000 second. Theoretically there is insufficient ultraviolet or infrared radiation from the standard electronic discharge tube to be harmful to the exterior or interior of the eye, even when the gaze is directed on the light source, unless the intensity is many times greater than that indicated. Nor have any indisputable cases of eye lesions been reported even though current photographic procedures commonly expose the eye to electronic flashes at a distance much closer than 9 ft. (about 3 m.). No ophthalmoscopic nor microscopic abnormalities were produced in the eyes of chinchilla rabbits by exposures of more than 2,000 lumen seconds from a discharge tube at a distance of 3 in. (7.5 cm.).

VACCINATION OF CHILD WITH ECZEMA

To the Editor:—*It is important to correct your consultant on his recommendation to vaccinate a child with atopic dermatitis (Queries and Minor Notes,* J. A. M. A. **152:***1392 [Aug. 1] 1953). Vaccination of allergic eczematous children may lead to severe or even fatal generalized vaccinia. No precautions are adequate to prevent the spread of the virus after inoculation into the eczematous damaged skin. The vaccinia virus can be disseminated by the general circulation. Such a risk would be warranted only after intimate exposure of the child to smallpox. Furthermore, the suggestion contained in the minor note (Queries and Minor Notes,* J. A. M. A. **153:***694 [Oct. 17] 1953) recommending the skeptophylactic method of vaccination seems ill-advised. Any exposure of the eczematous child to the vaccinia virus carries a high risk, whether by injection, scarification, or even contact with other freshly vaccinated persons.*

This last mentioned exposure is responsible for the variciform eruption described by Kaposi and seen predominantly on atopic eczematous skin. Such skin is peculiarly susceptible to infection by vaccinia or herpes virus (Fries, I. H.; Borne, S., and Barnes, H. L.: Varicelliform Eruption of Kaposi Due to Vaccinia Virus Complicating Atopic Eczema, J. Pediat. **32:***532, 1948; Fries, J. H., and Borne, S.: Vaccinial Infection in Children with Atopic Dermatitis,* J. Allergy **20:***222, 1949). The resulting vaccinial eruption appears identical regardless of which of these organisms is the causative agent.*

Joseph H. Fries, M.D.
52 Eighth Ave., Brooklyn 17, N. Y.

To the Editor:—*In* The Journal, *Aug. 1, 1953, page 1392, and Oct. 17, 1953, page 694, there are three items regarding smallpox vaccination of a child with eczema and its isolation from siblings who are being vaccinated. In an eczematous infant later under my care, generalized vaccinia and staphylococcic septicemia developed after vaccination of an older brother. The case was diagnosed as smallpox by consultants in a large general hospital, and an extensive emergency vaccination campaign followed the smallpox scare.*

The physician who vaccinated the older brother had immediately covered the site of inoculation by wrapping the entire upper arm with many turns of gauze bandage and anchored it with adhesive tape so that it could not be moved or the fingers inserted beneath it. This bandage was not removed until after the infant brother broke out with generalized vaccinia 12 days later. It appeared to me that transfer of the vaccine virus must have been through the saliva, respiratory mouth spray, or some other secretion or excretion of the older brother.

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ANGINA-LIKE PAINS

To the Editor:—*Concerning the query in* The Journal, *Dec. 5, 1953, page 1328, on angina-like pains, attention should be drawn to recent work (Machella, T. E.; Dworken, H. J., and Biel, F. J.:* Ann. Int. Med. **37:***543, 1952; Dworken, H. J.; Biel, F. J., and Machella, T. E.:* Gastroenterology **22:***222, 1952) indicating that periodic distention of the splenic flexure of the colon may explain these symptoms. In such cases, spontaneous pain in the substernal area, left side of the chest, or left shoulder or upper arm is associated with fluoroscopic evidence of gas in the splenic flexure. The pain is relieved by passage of flatus or defecation and may be accurately reproduced by balloon distention of the splenic flexure. The syndrome is seen mainly in patients with irritable colon and, though her bowel habits are not mentioned, the temperament of the patient described is the type frequently encountered in the latter condition. Treatment is supportive and is directed toward restitution of bowel function, reassurance as to the absence of serious disease, and discussion of inciting personal problems.*

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TREATMENT OF HODGKIN'S DISEASE

To the Editor:—*The outline of treatment for Hodgkin's disease in Queries and Minor Notes in* The Journal, *Oct. 24, 1953, page 774, contains a misstatement and an omission. The advice that "absorbable forms of iron should be frequently administered" is contrary to good hematological practice. Iron is indicated in Hodgkin's disease only if a hypochromic (iron deficiency) anemia exists. The usual type of anemia in Hodgkin's disease is not on an iron deficiency basis and does not respond to the administration of iron. The omission concerns triethylene melamine (TEM), which has been shown to be an effective oral agent in the treatment of Hodgkin's disease* (Am. J. Med. **15:***684, 1953;* Blood **7:***483, ibid.* **7:***729, 1952;* Brit. M. J. **1:***59, 1953).*

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